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27 FEB 1965

CALCUTTA UNIVERSITY CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 January 1960 Number 1

ASLIB CALENDAR

JANUARY

WEDNESDAY 27th – FRIDAY 29th. Junior introductory course to information work.

WEDNESDAY 27th. Economics Group visit to Business Archives Council.

FRIDAY 29th. Engineering Group meeting. 'Subject knowledge versus linguistic knowledge', by A. G. Readett.

FEBRUARY

TUESDAY 2nd. Winter meeting. 'Speed up your reading.'

WEDNESDAY 3rd. Economics Group visit to FBI Economics Department Library.

FRIDAY 5th. Scottish Branch Annual General Meeting in Edinburgh.

TUESDAY 9th Electronics Group visit to DSIR Lending Library Unit.

WEDNESDAY 17th. Economics Group visit to Croydon Public Library and Whitgift Alms Houses.

WEDNESDAY 24th. Economics Group joint meeting with South East Group, Reference Special and Information Section, Library Association.

MONDAY 29th. Senior introductory course to information work. See paragraph below.

MARCH

TUESDAY 1st. Winter meeting. 'Some libraries in Moscow and Leningrad', by Anthony Thompson.

Aslib exhibition of methods for protection and storage of periodicals opens. See paragraph below.

WEDNESDAY 16th. Economics Group Annual Meeting.

Director's Visit to Canada and USA

During 1959 the Director of Aslib spent nearly six weeks visiting members of Aslib, and other organizations with which Aslib has common interests, in Canada and USA. The trip was primarily in the nature of a goodwill tour of member organizations rather than an investigation of specific library problems, but he was able to see and discuss many aspects of library and information work of interest to librarians in this country. A few copies of his report to the Aslib International Relations Committee are available on request.

The Director, who was accompanied by Mrs Wilson, visited forty-six establishments, in addition to spending four days at the 50th Anniversary Convention of the Special Libraries Association in Atlantic City. He gave eight formal lectures and spoke informally about Aslib's activities at numerous other gatherings, as well as taking part in round-table discussions at various places on the tour. The itinerary included Montreal, Ottawa, Kingston, Toronto, Niagara Falls, Lorain, Cleveland, Toledo, Detroit, Ann Arbor, Chicago, Urbana, Washington, Philadelphia, New York, and Atlantic City. His report refers to the impact of Aslib's activities on the library profession in Canada and USA, standards of accommodation, library services, library education, the strength and weaknesses of American library organizations, transatlantic services, report literature, and mechanization.

New Year Honours

Members will be pleased to know that Mr H. T. Pledge, Keeper of the Science Museum Library and a member of Aslib Council, and Mr D. C. Martin, Assistant Secretary to The Royal Society, have been appointed CBE in the New Year Honours list.

Investigation of Inter-library Borrowing

An investigation of inter-library borrowing among special libraries is about to be undertaken by the Research Department of Aslib. It will be concerned in particular with the determination of the cost of borrowing and of the times involved in obtaining documents on loan, but the data secured will also be used to throw light upon many other aspects of borrowing practice. Current developments, including the increasing use of photocopies and of microprint, and the creation of the National Lending Library for Science and Technology, make it desirable to obtain more precise data than are at present available on current 'conventional' borrowing procedures and their results. The investigation will cover all the main types of special library and forms of document.

A two-stage investigation has been planned. At both stages the co-operation of Aslib members will be needed. The first stage will comprise asking a sample of the membership to provide some simple information about their borrowing. Analysis of the results will provide preliminary data, e.g. on the time taken to obtain documents sought, which will itself be valuable. The chief purpose of this exploratory investigation, however, will be to provide information upon which realistic plans for the second and more detailed investigation can be based.

The sample for this second stage will be drawn from volunteers revealed by the first. At the second stage a great deal will be asked of the members who have volunteered to co-operate: in particular they will be asked to keep detailed timed records of probably twenty-five consecutive borrowing transactions. The work should, however, be rewarding to them, both directly and immediately, and in the future.

It is hoped that those members who are approached when the investigation starts in January 1960 will be willing to co-operate.

Protection and storage of periodicals

An exhibition of methods and materials for protecting and storing unbound issues of periodicals will be held at Aslib from 1st to 15th March 1960. The material will be displayed in the Library for a fortnight only, but it is hoped that most of it will be retained at Aslib for permanent reference. Full details of the price and source of supply for material displayed will be available. It is known that many Aslib members have devised their own schemes for protecting and filing unbound issues of periodicals. The Aslib Librarian would be grateful to hear from such members as soon as possible, with a view to including examples of local ingenuity, as well as the commercially available materials, in the exhibition.

Senior Introductory Course on Information Work

A course on information work for graduate students will be held at Aslib from Monday 29th February to Thursday 3rd March. The purpose of the course is to introduce students to the basic techniques of work in an information department or special library. The programme will comprise seven lectures, a practical session, and visits to a variety of special libraries where the techniques may be seen in operation. The fee for the course will be 7 guineas. Further information and detailed programme and application form are obtainable from the Meetings Organizer, Aslib.

Scottish Branch

The Annual General Meeting will be held on Friday 5th February in the Scottish Central Library, Edinburgh. The theme for the meeting will be *What they read and why*,* a booklet recently published by HMSO and based upon a survey of the use of technical literature in the electrical and electronic industries. Speakers will be Miss Margaret Lamb, Royal College of Nursing, on rapid reading, and Professor Rex Knight, Anderson Professor of Psychology, University of Aberdeen, on the mechanics of reading. Professor Knight is well known in Scotland through his war-time summaries of current events. It is hoped, also, that Mr Christopher Scott, one of those responsible for the survey, and a speaker from Sheffield, will tell of schemes for the use of technical literature.

Electronics Group

A visit to the Lending Library Unit, DSIR, has been arranged for Tuesday 9th February. It will include an introductory talk on the nature and scope of the collection and on future plans for the National Lending Library for Science and Technology.

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* Calder, N. What they read and why: the use of technical literature in the electrical and electronic industries. HMSO, 1959. 2*s*. *DSIR Problems of progress in industry, no* 4.

The Group hopes to hold its Annual Conference from Friday 6th to Sunday 8th May, again at Ashridge College, where the high standard of accommodation and cuisine was so well appreciated last year. Among the speakers will be Dr A. Nightingale, MA, F INST P, Senior Lecturer, St Thomas's Hospital Medical School and Hon. Chief Physicist to the hospital, on the literature of medical electronics; and Mr Landon Goodman, BS ENG, AMIEE, British Electrical Development Association, on the literature of electronic control systems. Accommodation will be limited.

The *Handlist of basic reference material,* published by the Group last year, has now been out of print for some time but it is hoped to produce a second edition early this year.

The Group hopes, also, to issue a list of terms recently coined in the field of electronics, with definitions and references, to be kept up to date by regular publication of additions in the Group *Newsletter.*

Exhibition of Russian Publications

There will be an exhibition of some 4,000 Russian books and 600 periodicals from Friday 5th to Friday 19th February at the Royal Festival Hall. It will be open daily from 2 until 10 p.m. This exhibition is organized by the British Council as a counterpart of the British book exhibition held in Moscow, November to December 1959.

British Standard on Paper Sizes

The new British Standard Specification, BS 3176 : 1959, *Printed matter and stationery: A and B series of trimmed sizes*, is now available. The new Standard has been prepared under the authority of the Paper Industry Standards Committee and gives the International Organization for Standardization (ISO) A and B metric sizes of trimmed paper, together with their equivalent measurements in inches, to the second decimal. The sizes are so chosen that proportions are constant within each range, which facilitates photographic enlargement or reduction of material. Although the trimmed sizes cannot be cut economically from traditional British untrimmed sizes, several paper manufacturers are able to supply special sizes for this purpose, details of which will be given in a revised edition of BS 730, *Paper and boards (sizes, packaging, and labelling)*, now in preparation. Suitable paper for *Aslib Proceedings* is not yet available in the A and B sizes. BS 3176 : 1959 is available from British Standards Institution, British Standards House, 2 Park Street, London, W.1, price 4*s.*

Salaries and Conditions of Work in Medical Libraries

The Medical Section of the Library Association has recently published the Report of the Committee on Salaries and Conditions of Work in Medical Libraries in Britain. The report is dated September 1958, but distribution has been delayed for various reasons. The information on current practice is based on replies to a questionnaire from thirty-four member libraries of the Section, the majority being university institutions. Information on salary scales was considered to be of little value unless related to the type of library and conditions of work; size of collection, number of readers, hours of opening, lending policy, size of library staff, etc., are therefore summarized. The qualifications and salary scales of the different grades of staff at the time of the inquiry are indicated, and the report concludes with recommendations on minimum services in medical libraries, number of staff (a minimum of three is recommended), holidays, hours of work, qualifications, and salaries. These recommendations relate primarily to university institutions, since the Committee felt unable to make any recommendations for industrial libraries in this field. Copies of the report may be obtained from the Hon. Secretary, Library Association Medical Section, 6 Crossways, Sutton, Surrey.

Huddersfield and District Information Scheme

A local co-operative information scheme has been inaugurated in the Huddersfield area. It is to be known as Huddersfield and District Information Scheme (HADIS). The object of the scheme is to make available to members the combined resources of books and periodicals dealing with commercial, scientific, and technical subjects held by special libraries in the area. Membership is open to public libraries, and libraries of colleges, societies, research organizations, and industries willing to lend material within HADIS. Further particulars may be obtained from the Hon. Secretary, Mr L. Taylor, Librarian, Industrial Gear Divisions, David Brown Industries Ltd, Park Works, Huddersfield, Yorks.

New Information Centre in Paris

It is reported that a new centre for information on molybdenum disulphide and solid lubricants has been established on a non-profit-making basis in Paris at 28 rue Saint Dominique, Paris 7e.

Farmington Plan Extension

A two-year grant of $15,000 for extension of the Farmington Plan for the Acquisition of Foreign Publications has been announced in Washington. The grant has been made by the Council of Library Resources to the Association of Research Libraries for the extension of the Plan to areas and subjects not previously included: for study of the national acquisitions situation with respect to special classes of publication, for establishment of selection and purchasing arrangements abroad, and for the co-ordination of acquisition programmes with specialized groups of users, for which purpose seven area sub-committees have been established.

Mechanical indexing and retrieval

An investigation into problems of mechanical indexing and retrieval, sponsored by the Council on Library Resources, is to be carried out in the United States. The programme is reported to include recording by machine—on punched cards, punched tape, or magnetic tape—of an experimental text of about 300,000 words. A general-purpose computer will search this text with a view to discovering and printing out information in response to questions put to it by scientific workers. A number of techniques have been devised for the search and for testing its efficiency. Results of the mechanized information retrieval will be compared with those of traditional methods. The investigation will take nine months and is expected to lead to a more comprehensive study.

Study of Oral Communication

The National Science Foundation, Washington, reports that an investigation into oral communication of research information is now being carried out by the Institute for Advancement of Medical Communication. The object of the investigation is to find out whether reports of information presented orally at scientific meetings is ever published, if so when and where, the cause and effects of delayed publication, and what remedial action, if any, should be taken.

Optics and Spectroscopy

The Optical Society of America has recently announced publication of an English translation under the title of *Optics and Spectroscopy* of the Russian monthly journal *Optika i Spektroskopiya,* commencing with volume 6, no. 1, January 1959. *Optics and Spectroscopy* is available, together with the *Journal of the Optical Society of America*, at $25 per annum, plus $3 postage, from the American Institute of Physics, 335 East 54th Street, New York, N.Y.

Polish Publications Exchange

The Research Centre for Computing Machinery, Polish Academy of Sciences, is anxious to obtain, on an exchange basis, literature on the theory of electronic computers and their industrial, mercantile, linguistic, and other applications, also on magnetic materials, applications of semiconductors, numerical analysis and linear programming. In exchange the Centre offers *Papers of the Research Centre for Computing Machinery of the Polish Academy of Sciences,* or would obtain literature published by other Polish institutions or commercial houses on such subjects as mathematics and electronics. Those interested in this exchange offer should write to Mrs Maria Starkiewicz, Exchange Librarian, Polish Academy of Sciences, Research Centre for Computing Machinery, Warsaw, Poland.

NEW MEMBERS

Corporate

Name	*Locality*	*Representative*
Aron Electricity Meter Ltd	London	Dr A. C. Robb
Bristol Aircraft Ltd	Bristol	C. H. Barnes
Bristol Building Centre Ltd	Bristol	R. Moxley
British Association for Commercial & Industrial Education	London	P. J. C. Perry
California. University. Los Alamos Scientific Laboratory	U.S.A.	Librarian
Chemstrand Corporation	U.S.A.	J. G. Baker
Clifford Motor Components Ltd	Birmingham	W. A. Scott
'Diamond H' Switches Ltd	London	G. H. Walton
Doncaster, Daniel, & Sons Ltd	Sheffield	P. L. Lewis
Federation of British Carpet Manufacturers	Kidderminster	V. D. Freedland
Fletcher Miller Ltd	Hyde, Cheshire	L. Downend
Garrett's Green Technical College	Birmingham	C. D. Batty
Hawker Siddeley Brush Turbines Ltd	Hucclecote, Glos.	F. Andrews
India. EME School	India	The Commandant
Lowestoft Technical College	Lowestoft	J. G. Miller

THE ORGANIZATION OF LIBRARIES IN THE UNITED KINGDOM

S. P. L. FILON

Librarian and Secretary to the Trustees, National Central Library

34th Annual Conference, Scarborough, 6th October 1959

IN this paper I propose first to describe very briefly the main types of library and their functions and then to consider in more detail what arrangements exist for facilitating interlibrary co-operation and in particularly interlibrary lending in this country. The expression 'organization of libraries' is not meant to imply the existence of any centralized or official organization, such as exists for instance in Denmark. There are, however, certain voluntary arrangements for mutual aid among libraries which cover between them the great proportion of the more important libraries, and although these arrangements do not constitute an all-embracing organization, they form the basis upon which an all-inclusive system of co-operation could be built.

The more important types of library are as follows:

NATIONAL LIBRARIES

These are State institutions supported wholly or largely from Government funds, e.g. the British Museum Library, the National Library of Scotland, the Library of the Natural History Museum, the Science Museum Library, and the Patent Office Library. Their service is to readers and scholars from all parts of the country and all parts of the world. The great library of the British Museum, which certainly ranks among the first three libraries in the world, is of course in fact the British national library, but its administrative dependence upon the Museum means that it has not quite the same role at present in relation to other libraries as have the national libraries in most countries.

The main purpose of such libraries is not to lend but to preserve material, to act as reference libraries and in some cases to provide a bibliographical service. Often the national library of a country is the headquarters of a central cataloguing service; this is in fact the case with the British Museum, on the premises of which, and with whose co-operation, the *British National Bibliography* is compiled.

Many national libraries are general libraries not devoted to any particular subject and covering both British and foreign literature. This applies particularly to those libraries which have been given the right of legal deposit under the copyright Acts, a privilege which has enabled them to build up complete collections of books printed in this country, as each publisher is bound to deposit a specified number of copies of all his publications at each of the copyright libraries, though, apart from the British Museum, only such volumes as are claimed by each of the libraries concerned. Libraries which have the right of legal deposit (there are five in this country and in Ireland) cannot, of course, lend books deposited under the law of copyright. Moreover, it is in fact unusual for such libraries to lend any of their material (partial exceptions being the Bodleian Library and the Cambridge University Libraries, the former lending Oxford theses and foreign university theses through the National Central Library and the latter lending all types of material to graduates and members of the University). The reference function of this type of library being paramount, it is desirable that books which may require to be examined by readers at any moment should not be away on loan when asked for, and that works, many of which are either expensive or rare, should not be allowed to deteriorate by being sent through the post.

Some national libraries are special libraries, e.g. those of the Science Museum and Natural History Museum, but such national special libraries are very complete and also wide in their coverage and tend to develop into general libraries of science, of sociology or history, or other branch of the humanities or broad division of knowledge. One may count, for instance, the British Library of Political & Economic Science at the London School of Economics as a typical library of this kind though, like the Bodleian Library and the Cambridge University Library, it is also a university library.

PUBLIC LIBRARIES

The oldest of these date from the years 1850 onwards. They are established and administered by local authorities, their funds being allocated from the local rates. Each local authority is at present quite free to establish the kind of public library service which it wants. The library is administered by a committee of the Council to which the librarian is responsible. County libraries are administered not by an *ad hoc* committee as in the case of municipal libraries but by the Education Committee of the County Council.

The services of public libraries, especially of municipal libraries, vary greatly in extent and in quality. These services are reinforced, and in some cases bolstered up, by the system of interlibrary lending established in the nineteen-thirties. Unlike national libraries, which are hedged about with regulations, the public and county libraries are not prohibited by any law from lending to one another provided that no charge is made for this, apart from the cost of transport of the books. The book stocks of public libraries consist in most cases mainly of books in the English language, the proportion of 'fiction' to 'non-fiction' varying greatly. The number of periodicals taken is usually relatively small, though public libraries are beginning to show more appreciation of the importance of this type of material, particularly in the scientific field, while the very largest public libraries, those of great cities like Birmingham, Manchester, Liverpool and Glasgow and others, cover English periodicals, particularly in technology, and books in foreign languages, on a much wider scale. There is no doubt that many of the smaller urban libraries are unable to provide sufficient funds to give a really adequate library service. This inadequacy shows itself particularly in the size and quality of the book stock which they provide, and the Library Association, in presenting evidence on this subject recently to the Ministry of Education Committee on the Structure of the Public Library System of England and Wales (the 'Roberts Committee'), recommended that a minimum annual expenditure on books of £5,000 was desirable. L. R. McColvin had already in 1942 drawn attention to these deficiencies and had suggested as a remedy the amalgamation of adjacent library areas into 'library units' of such size as to guarantee efficiency. The Roberts Committee have recommended placing public and county libraries under the general supervision of the Minister of Education, who should have the power to compel any inefficient library authority to surrender its library powers to the County Council within whose boundaries it lies.

The book selection in a public library is usually the direct responsibility of the librarian, subject to the approval of his committee. The vexed question as to whether the library should provide mainly the books which would develop the cultural level and knowledge of the community, or whether it should supply chiefly the type of popular material which many ratepayers prefer, such material as is often also supplied by circulating and other subscription libraries, is one which is resolved independently by each public library according to the views which happen to prevail on its committee. Most public libraries, however, perform a very great service to the community by making available on loan for reading at home a fair proportion of the books which their readers need, both for recreational purposes and to supplement their cultural and technical knowledge. This service, moreover, has been greatly improved and enlarged by co-operative arrangements made with other libraries and by the interlending service of which I shall have more to say later. Furthermore, most public libraries nowadays do not restrict their immediate services to readers in their own areas but allow the readers of other libraries to use them when they need to do so.

It will be noted that one of the major differences between public and national libraries (which are also from one point of view 'public' libraries) is that the former lend much of their material for home reading whereas the latter are mainly reference libraries. This enables the public libraries to take part in interlibrary lending on an unrestricted scale, an advantage which they possess even in relation to university and special libraries and which explains why in this country this type of library has become the basis on which the structure of interlibrary lending has been reared.

UNIVERSITY LIBRARIES

These differ from both national and public libraries in that they exist to serve a restricted clientele, the academic staff, research students, and undergraduates of universities, though their resources are in most cases made available to a wider public through interlibrary lending and by allowing outside persons to use the library for some special research. The governing body of each university is independent but a considerable part of the money required to run it, including its library, is provided from State funds on the recommendation of a Treasury Committee, the University Grants Committee. This introduces a certain measure of unity in the administration and standards of different university libraries. The books bought for such libraries are chosen mainly in response to academic needs and to provide the basis for the studies and research carried out by the different faculties, dependence on the library being on the whole greater in the arts than in the science departments, though the latter require very considerable collections of periodical literature. The book collections of university libraries being so closely conditioned by the requirements of academic courses and research, the selection of books is mainly in the hands of the academic staff acting as advisers to the librarian whose main task is to ensure equitable distribution of the book fund and to fill in, as much as possible with the money available, gaps left by the professorial claims. The book stocks of universities are rich in source material of all kinds in many languages, containing very valuable sets of publications as well as of periodicals in all subjects covered by the academic syllabus. The majority of university libraries participate in the national interloan system. They are in fact one of the main sources from which foreign books and research periodicals in all languages can be borrowed by other libraries.

This is a convenient point at which to mention the libraries of *Technical Colleges,* which have been created in such large numbers in recent years. Inevitably they possess some characteristics of academic libraries, though most of them have a marked bias towards technology and practical subjects. Libraries in this class are rapidly growing and will contribute in an ever-increasing degree to the general book provision of the country. In many cases they already partake in interlending schemes, either through the National Central Library or through a local scheme.

The many libraries of *Institutes of Education* and also of the *Medical Institutes* of universities can be regarded as university libraries, though they are at the same time special libraries. The majority take part in interlibrary lending schemes.

SPECIAL LIBRARIES

This term is applied to any non-general library, or even by some to any non-public library. It is not possible to speak of such libraries as though they belonged to a single type: the term covers the libraries of learned societies, of government departments, of research associations, of industrial firms, and in fact all libraries that do not belong to one of the classes described already. In terms of numbers the special libraries now represent the majority of libraries in this country, though many are still very small in size. Their number is continually increasing as the need for libraries and information in industry is realized. A great proportion of special libraries now belong to private firms and are in many cases of recent creation.

It is not possible here to discuss in detail the various types of special library. There is naturally no uniformity in their method of administration or government. The only common characteristic is that each such library is devoted to the literature of a special subject or subjects. There are more special libraries in the field of science and technology than in that of the humanities. Such libraries, being mainly adjuncts to research, contain chiefly source material in the form of learned and technical periodicals, monographs and background material playing usually a secondary role. Equally important with the collection of such material is its exploitation on behalf of the research clientele of the library by the building up of an information service based primarily upon a minute analysis and classification of the printed and other material available or to which access may be gained.

Many special libraries have of late played an increasing part in library co-operation, in the national interlending system and other schemes of co-operation, by direct co-operation with the National Central Library or Aslib, or through membership of one of the Regional Systems, or by taking part in some local scheme, such as CICRIS* in West London, or LADSIRLAC† in Liverpool, or through membership of the Science Library Supplementary Loan Scheme. The contribution which such libraries can make to the bibliographical resources of the nation is a very great one, as the coverage of specialized and foreign language material by special libraries is collectively most extensive.

INTERLIBRARY LENDING

I will pass on now to my main theme, which is library co-operation and in particular interlibrary lending. Interlending between libraries is of course not an end in itself but a necessity imposed by the exiguity of individual libraries' funds as compared with the vast modern output of world literature, or more strictly it is one solution for dealing with this problem. There are in fact only the following alternative ways in which the problem can be tackled:

1. Libraries may individually acquire material without regard to the purchases of other libraries and then endeavour to supplement each other's shortcomings by interlending. This system, however, is unlikely to produce complete coverage of world literature and requires the creation of catalogues in order to locate the works required.
2. Literature may be acquired on a national basis and lent from a central library, either to individuals or to libraries as required. This system may have some of the drawbacks of a centralized bureaucratic organization but in theory should produce complete coverage.
3. Individual libraries may combine together in a scheme of co-operative purchase of books and periodicals, thus sharing the total cost, and then make use of each other's acquisitions by interlending. This system should also produce complete coverage but depends to a great extent on goodwill and co-operation. It may, if well organized, combine the advantages of the first two systems.

At present we have already in this country a mixture of the first and last systems and are about to start a large-scale experiment with the second in the shape of the new National Lending Library for Science and Technology.

It may be as well at this point to give a brief survey of the history of library co-operation in this country. Organized interlibrary lending in this country can be said to date from the creation of the Central Library for Students in 1916, although that library was not originally intended to promote interlending but rather to loan books direct to individual students and classes. The new library was financed by means of a grant from the Carnegie United Kingdom Trust and by voluntary subscriptions. It was soon found that its own resources were insufficient and so the co-operation of other libraries willing to lend their books through the agency of the CLS was sought; these were termed Outlier Libraries. This and the creation of county libraries (1919) led to the abandonment of the system of making loans in response to direct requests from individual readers;

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* Co-operative, Industrial and Commercial Reference and Information Service.

† Liverpool and District Scientific, Industrial and Research Library Advisory Council.

they were now to be made on application from the reader's library (public, university, or special) or branch of a county library. During the 1920s the CLS enlisted the co-operation of a considerable number of special libraries as Outlier Libraries, the Carnegie United Kingdom Trust making a special grant to a number of these for the purpose of enabling them to help the CLS with loans and provide it with a copy of their catalogues. A total of more than £80,000 was made in grants to Outlier Libraries, but even when these resources had been exhausted the system continued and developed. Some of the earliest Outlier Libraries were the Royal College of Nursing, the Royal Aeronautical Society, and the Science Library.

The university libraries were pioneers in organizing a formal scheme of library co-operation in this country. They set up an interlending organization with a clearing house at Birmingham University in 1925. At first only those university libraries and libraries in membership of the scheme were able to benefit from it, but in 1931 the National Central Library took over the functions of clearing house on behalf of the co-operating university libraries and so merged the scheme in the wider interlending scheme which came into being at that time as a result of the creation of the Regional Library Systems.

THE REGIONAL SYSTEMS

The concept of Regional Library Systems based on the county divisions, each Region including a varying number of counties according to the distribution of libraries in the country, had already been accepted in the so-called Kenyon Report of 1927 (Report of the Board of Education Departmental Committee on Public Libraries), as was also the role of the Central Library in acting as a clearing house for such Regions. In 1930 a Treasury Grant-in-aid of £3,000 was made to the Central Library for Students towards the cost of: 1. the supply of bibliographical information; 2. the promotion of the Outlier System; and 3. the preparation of a Union Catalogue. At the same time, in accordance with the wishes of the Treasury, the trustees of the CLS adopted a new constitution and the Library was renamed the National Central Library.

The Regional Library Systems which numbered ten, or rather eleven (for the Welsh region was subdivided into two), consisted at first mainly of the public and county libraries in their areas, though most universities and a few special libraries joined in the early days. Each Regional System established a headquarters or Regional Bureau in the chief public library in the area.

The first task undertaken by the new Regional Bureaux was the compilation of union catalogues of books and periodicals in the libraries in their Regions. Grants were made to the Regional Systems by the Carnegie United Kingdom Trust for this purpose. In all cases, however, these grants were exhausted before the completion of the catalogue, so that the continuation of these Regional Union Catalogues has had to be paid for out of the current income of the Regional Bureaux from subscriptions levied from the constituent libraries. These subscriptions, the fixing of the level of which required the approval of the constituent libraries, or rather of their authorities, were never quite sufficient to deal with the cataloguing side of the work in addition to the exploitation of these catalogues to produce an effective lending service. The consequence that the catalogues were not in most cases brought up to date inevitably had an adverse effect on the efficiency of the interlending service. Proposals have now been made in the Roberts Report which, if adopted, would ensure sufficient funds for effective library co-operation by making the contributions of local libraries subject to statutory regulations.

WORKING OF THE SYSTEM

The interlending system: NCL—Regions—Outlier Libraries—University Libraries, works roughly as follows.

Normally loans are made to libraries and not direct to individuals. In the case of a reader borrowing from a library that belongs to a Regional System, the request, if it cannot be satisfied by the reader's own library, is passed on to the Regional Bureau, where it is checked in the Regional Union Catalogue. If a location is found the owning library is requested by the Regional Bureau to forward the book direct to the borrowing library. Often several libraries in the Region have the work and the request is sent on a rota, in case it proves to be out on loan at the library first selected or even at the second. Requests for books or periodicals for which there is no location are passed on to the National Central Library, where they may arrive several days, or even a week or more, after the reader originally made the request. Requests coming from special and university libraries not in Regional Systems go direct to the NCL; university libraries that belong to Regions (and the majority do) can either apply through the Regional Bureau or direct to the NCL as they prefer in any particular case.

The National Central Library therefore receives requests from Regions (about 50 per cent of the total of applications) and direct from individual libraries. In order to satisfy these requests, totalling now about 80,000 per annum, i.e. on the average about 300 in every working day, the Library has the following means at its disposal: *a.* its own stock of about 160,000 volumes; *b.* its union catalogues; *c.* systematic search among co-operating libraries by means of 'desiderata lists'; *d. ad hoc* applications to individual libraries thought likely from their nature to possess the required work.

At present the NCL possesses two principal union catalogues of books: the *National Union Catalogue,* compiled from duplicate entries of the different Regional Union Catalogues and having the form of a sheaf catalogue; and the *Outlier Union Catalogue,* recording the additions to and works located in co-operating special libraries, besides the positive and negative results of searches for books not previously recorded in the catalogues. Periodicals are separately recorded in a *Periodical Union Catalogue* which contains much material not found in the *British union-catalogue of periodicals* (Bucop) or the *World list.* The catalogues are compiled partly from information supplied by the co-operating libraries regarding their holdings and partly from information obtained by the NCL as a result of individual applications to libraries for specific works. One of the reasons for the establishment of Regions was to decentralize and simplify the work of building up a *National Union Catalogue.* That this was kept separate from the *Outlier Union Catalogue* was, however, a mistake in policy which it will be desirable to rectify in future by means of photographic methods.

The tracing of foreign books and periodicals constitutes a special problem. Relatively few are obtainable from public libraries, the NCL itself has not up to the present concerned itself to any degree with the purchase of foreign books, while periodicals are, generally speaking, outside its scope. The *World list* and Bucop, together with the additional information in the NCL Periodical Catalogue, are a sufficient guide in most cases to the tracing of foreign periodicals in this country. Even so, some have to be obtained from abroad, and this applies to a greater extent to monographs and books. University and special libraries are the main source of foreign material in this country, but they cannot be expected to provide everything and so already before the war the NCL had organized interlending with foreign countries, thus following in the footsteps of the old university interlending scheme which was mentioned earlier. These interlending relations with foreign countries were interrupted by the war, and since 1946 the whole system has had to be built up anew. The NCL follows the principle of dealing through one library—generally the national library—with all other libraries in each country. This has great advantages as regards the safety of the books on loan and ensures to a great extent that libraries do not ask for books which are already in their own country. Also it simplifies the problem of locating books. It does, however, in many cases introduce a certain amount of delay. Interlending relations have now been established with nearly fifty different foreign countries or members of the British Commonwealth. The main traffic, of course, is with the countries of Europe, chiefly Western Europe, Germany and France being our two biggest clients. East European countries do, however, avail themselves of the service to a considerable extent, and now Russia, after remaining aloof for many years, has also consented to interlend books with us. Loans to and from the U.S.A. are not on a big scale, both because we are well supplied with each others literature and because the Atlantic seems to create a considerable barrier, the problem being solved much more cheaply and conveniently by the provision of photographic copies of the material required.

So far interlibrary lending has been considered as a means of remedying the deficiencies of individual libraries. Earlier the view was expressed that, ideally, this should be done in conjunction with a scheme of co-operative book purchase so that the whole of the vast production of books and periodicals can be covered completely and made available at any point by lending to that point. Such schemes of co-operative purchase exist but are partial in coverage and they can be very usefully supplemented, especially as regards older books no longer available on the market, by a redistribution of the existing stocks of libraries. This can be done gradually by redistributing books no longer wanted by their present owners. The NCL has been engaged on this work since before the war, though it was then confined to redistributing discarded books among university libraries. Since the war one of its departments, somewhat grandiloquently named the British National Book Centre, has carried on this work which has been widened to cover more than 400 libraries of all kinds. It is not, as will be understood, an exchange system though there enters into it an element of reciprocity. Another more far-reaching consideration plays some part, in that books are as far as possible sent where they will be available to all through the interlending system. It is hoped that funds may be available in the future to extend the scope of this service to include libraries in foreign countries. Many new libraries in the British Commonwealth have already benefited from the help of the British National Book Centre.

So far only the system of co-operation based on the NCL has been mentioned. Parallel but unconnected schemes of co-operation exist, having in many cases come into existence in recent years. The longest established is probably the Aslib lending service which, as you know, operates for the benefit of the organizations that are in membership of Aslib, the information service of which has knowledge of and access to a very wide variety of technical libraries and sources of scientific information. The NCL has, of course, always been aware of the fact that the special requirements of research workers in this field make the normal channels of interlending unsatisfactory in many cases, chiefly on account of its relative slowness. However, even here, when Aslib occasionally fails to locate material required by one of its inquirers the NCL is glad to assist by circulating the request through the normal channels of the national interloan system. There is no doubt that special treatment is required for technical research inquiries and that Aslib performs a valuable function in dealing with so many of these. One should mention here also the Aslib Subject Groups based on the excellent principle of organizing co-operation between libraries of a like character. There is no doubt that this principle needs to be extended to the whole country and over the whole field of knowledge.

The Science Library also has been able to increase the value of its lending service by the creation of a union catalogue of some of its borrowing organizations, so laying the basis for a Supplementary Loan Scheme. It is furthermore an Outlier Library of the NCL, thus lending much to general libraries from its own stock, though precluded unfortunately from including in this service the resources of the Supplementary Loan Scheme. The DSIR Lending Library Unit also co-operates with the NCL in the supply of Russian and other foreign material, and it is to be hoped that the services of the future National Lending Library for Science and Technology and those of the NCL will be in some way co-ordinated. At the present time the NCL deals with a considerable number of requests in the field of science and technology, both for books and for periodicals; they amount, in fact, to over 50 per cent of the total requests received, which is not surprising when one considers that about 1000 special libraries borrow direct through the NCL. Certainly the demand for such material on loan is increasing and will continue to do so, and the need for a national lending library financed on a much more generous scale than the Science Library is evident.

Recent developments of some interest are the independant local schemes of co-operation between public and special libraries which have been developed at Sheffield, at Liverpool, in West London, and very recently at Newcastle upon Tyne. These are all based on the idea of a central headquarters at the public library at which a union catalogue or some key to the contents of the co-operating special libraries is built up. The special libraries benefit by the general stock of the public library which acts as a clearing house for requests from members of the group. Some measure of co-operative acquisition of periodicals is a feature of such schemes, which give a good service, within limits, to their members, for these are usually nearly all connected with the local industries.

OTHER CO-OPERATIVE SCHEMES

At this point it is fitting to say something about the schemes for more complete coverage of British publications, both on a regional and on a national basis, which have been evolved in recent years. It was realized a long time ago that many books asked for on loan proved unavailable in this country, even after an exhaustive search had been made. They had either not been bought by libraries in the first place, or else had been lost or disposed of. The problem was first brought to the official notice of librarians by the recommendations of the Scientific Information Conference of the Royal Society in 1948. It was felt by the public libraries, which constituted the majority of libraries in the Regional Systems, that it was essential to tackle at least the problem of complete coverage of current British books on a co-operative basis. Two of the Regions, those for London and for the South-eastern Counties, set about creating what they called 'subject specialization schemes'. These were based on the idea of dividing the field of knowledge in an agreed way using the Dewey Decimal Classification (universally adopted in public libraries) and allocating appropriate subjects to individual libraries which were expected to buy everything in English in their subjects. The criterion was whether the book appeared in the *British national bibliography* which began to be published about this time. Of course, the money available in the co-operating libraries was sometimes insufficient to ensure purchase of the very expensive books, and on the other hand many very cheap books were also not bought because it was felt that they would be of no lasting interest. The London and South-eastern schemes formed models which have been imitated by many of the other Regions. As most Regions were not prepared to aim at complete coverage, and as it was not in any case considered necessary that certain books, hardly ever likely to be used, should be collected by ten different Regions, it was decided by the Regions as a whole to adopt a two-tier system and establish, over and above the Regional Subject Specialization Schemes which would only aim at attaining a reasonable degree of coverage, an *Inter-Regional Coverage Scheme,* whereby each Region was allocated one of the main divisions of Dewey (with certain exceptions) with the obligation to make itself absolutely complete in its coverage of the material listed in that section of the *British national bibliography* (excluding periodicals and American books). This scheme came into operation on 1st January 1959.

The new co-operative schemes have inevitably had some effect on the working of the interlending system. It has been agreed that current publications, from the beginning of 1959, should not be recorded in the National Union Catalogue at the National Central Library. From this there follows the natural corollary that requests for such books should no longer be forwarded to the NCL by the Regions, which are assumed to have acquired them, or, if they have not, to have access to them by direct application to the appropriate Region in accordance with the dispositions of the inter-regional coverage scheme. There remains for the NCL the problem of how to supply such books in response to requests from special libraries which are outside Regional Schemes. The NCL is prepared to accept such requests in these cases and to try to locate the works required from other university or special libraries; it cannot, however, borrow these from the Regions, except in the case of the South-eastern Regional Library System which, having regard to the fact that its constitution at present excludes the possibility of recruiting non-local authority libraries, has generously agreed to accept requests from the NCL for post-1959 British books on behalf of special libraries situated in the area of the South-eastern Region. It is possible that the London Region may follow suit. Other Regions are in a position to include special libraries in their membership.

One new development in library co-operation which should be mentioned as constituting a landmark in this country's library history is the University of London's decision to create a deposit library for the co-operative storage of the less frequently wanted books and periodicals in the college libraries of the university. The model for all such organizations is, of course, the celebrated Midwest Inter-Library Centre in the United States. The London project is, however, less far-reaching and does not involve any transfer of ownership to the deposit library of the books stored there; it is merely a means of saving space in central London by creating an overflow or reservoir on the outskirts. One wonders whether this enlightened policy will be followed elsewhere. Many libraries are suffering already from lack of space, and it seems likely that the policy of complete coverage, coupled with that of retaining one copy at least of each publication, will necessitate ultimately some form of co-operative storage of books.

FINANCIAL AND OTHER PROBLEMS

The conclusion which one can draw from the Recommendations on Library Co-operation based on the Vollans Report of 1952 and from the Roberts Report published in February this year is that the interlending system is on the whole a soundly organized one—though the present arrangements for the participation of special libraries in the scheme are more open to doubt. The inadequacies of the system, its slowness and inability to locate a certain proportion of material required, are due mainly to lack of funds which has limited the quality and numbers of the staff available to operate the system and has prevented the completion and maintenance in an up-to-date condition of the various union catalogues facilitating the quick location of material required.

The NCL has been mainly dependent on Treasury support since the war, though this has in turn to some extent depended upon the NCL obtaining voluntary support from libraries and Regional Systems. The amount of the Treasury Grant has been very considerably increased since 1945, enabling the library to deal with a much bigger flow of requests, to set up the British National Book Centre for the redistribution of unwanted books, and to maintain two new union catalogues, one for Russian and one for German material. Nevertheless, the library's funds have not sufficed to bring its main union catalogues up to date, or to enlarge their scope to include an appreciable part of the loanable books in many special libraries.

The Regional Systems have been in a much less satisfactory position as regards money. Their funds have derived solely from subscriptions levied from their co-operating libraries, subscriptions that could not be increased without the agreement of the library authorities concerned. With these funds they have had to pay for the staff dealing with loan requests and also, with what was left over, for staff to work on the catalogues. The result has been relatively ill-paid and partly inexperienced staff, too few in numbers, who have struggled valiantly to deal with the ever-mounting flood of requests, at the same time trying to make some progress with the catalogues, the initial grants for which (made by the Carnegie Trustees before the war) were already exhausted. This unsatisfactory financial position has largely accounted for: 1. the inability to trace more than about four-fifths of the works asked for in the Regions; 2. inevitable delays in dealing with requests, thus slowing down the whole system on the national level as well; 3. lack of adequate provision of bibliographical material and of bibliographical knowledge at the Regional Bureaux.

As regards the co-operating special libraries, many of these are directly associated with the NCL as Outlier Libraries, or on a more informal basis. A high proportion of them subscribe voluntarily to the funds of the library. Apart from this, the help which they give to other libraries through the NCL, in the form of specialized books and periodicals, is very great. A relatively small number of special libraries belong to one or other of the Regional Systems and pay small subscriptions towards their upkeep. From this brief survey it will be seen that library co-operation is being operated in this country on a very low budget. The system cannot, therefore, be expected to be wholly efficient. There is no doubt that if sums of money comparable with what one believes will be available for the running of the National Lending Library for Science and Technology were available for the interlending service things would be very different.

Among the main problems which confront us is, first and foremost, the question of speeding up the service. This depends upon the employment of more staff, especially of staff more experienced and better qualified bibliographically and from the point of view of subject knowledge. It also depends upon the possibility of rapidly locating the majority of items asked for by a routine process; this requires union catalogues with a greater coverage than we have so far. Mechanical improvements in the realm of photographic reproduction and of communication (such as the use of a 'Telex network') are also very important. In this connection there seems to be little doubt that the future will see a continuous increase in the proportion of requests for loans, especially of material in periodicals, satisfied by means of some form of photographic reproduction. The loan of the actual volumes, particularly where material is required for the information it contains rather than for literary or recreational purposes, is likely to be reserved for special cases. This is already beginning to be true for international loans.

An improvement in the coverage and up-to-dateness of the existing union catalogues would require a considerable capital grant, but so far this has not been forthcoming, partly no doubt because the catalogues are compiled on a local as well as on a national basis. The Report of the Ministry of Education Committee on the Structure of the Public Library Service in England and Wales—known generally as the Roberts Report—recommends that the Treasury should make a non-recurrent grant towards the cost of 'the completion of an adequate series of regional catalogues, and of the catalogue of the NCL'. This same report proposes that library co-operation should be placed on a firmer basis, which would give a more efficient service, by suggesting that 'a reasonable contribution from each Region towards the cost of the services rendered them by the NCL should be met by a compulsory payment from each library authority'. There is a precedent for such statutory payment by library authorities in Scotland, where the Scottish Central Library is partly maintained in this way. The cost of running the Regions efficiently would also be paid for by obligatory contributions from local authorities. Apart from the capital grants for the union catalogues the State's contribution would be limited to half the cost of maintaining the NCL.

There is no doubt that if the funds were available the present slightly haphazard and *ad hoc* arrangements for securing co-operation between libraries could be greatly improved and extended, even beyond the requirements envisaged in the Roberts Report. Thus, for instance, there could be developed some means of improving the tracing of books and information in special libraries, means which would supplement the existing methods which include the NCL's union catalogues and the Aslib information service. The desired improvement might be achieved by the formation on a national scale and covering all subjects of a system of interrelated groups of libraries naturally allied by the similarity of the subjects they covered, on the model of the present Aslib Subject Groups, intermingled perhaps with a certain number of mixed groups based on geographical contiguity, such as exist already in certain industrial districts. Such an organization would probably enable most special libraries to benefit more from the interlending system than they do at present.

Other desirable projects might include improvement of the coverage of foreign publications, both books and periodicals, by libraries on some kind of co-operative basis, though here it is evident that the National Lending Library for Science and Technology will play a major role and might possibly lead to the creation of a national lending library for the humanities; and perhaps also the creation of deposit libraries which would allow the preservation for loan purposes of material not in immediate demand.

If these and other aspects of library co-operation could be developed one could then really speak of an organization of libraries in this country, an organization which would be at the service of any library's readers needing something beyond what is merely recreational and ephemeral and outside the scope of that library's resources.

DISCUSSION

The Chairman for the session was E. ALAN BAKER (Librarian, Ministry of Supply).

In reply to questions Mr Filon said that the estimated cost of interlibrary loan given at £1 per loan was probably on the generous side and that the actual cost was a little less than this. CICRIS and a number of other local systems had on connection with the NCL and Regional System. The National Central Library normally refused requests for books priced at less than 25*s*., but such requests might be considered in exceptional circumstances. He was pleasantly surprised to hear that a recent survey made by Aslib showed that borrowers had failed to obtain only 1 to 2 per cent of their requirements on interlibrary loan. The NCL received 80,000 requests for loans per annum and was able to deal with 78 per cent of them. The difference in percentage of failure might be accounted for by the fact that regional and other systems would have supplied the easier loans before requests came through to the NCL. He considered that normally requests for interlibrary loans should be restricted to out-of-print British material and foreign books and periodicals.

DOCUMENT REPRODUCTION:

A DISCUSSION FORUM

CHAIRMAN: GORDON H. WRIGHT

County Technical Librarian, Hertfordshire County Council

34th Annual Conference, Scarborough, 6th October 1959

CHAIRMAN'S INTRODUCTORY REMARKS

WHEN the Hertfordshire Technical Library Service was inaugurated three years ago the County Council followed their normal practice of appointing an Advisory Committee with members drawn from industry to assist in the development of the scheme. At an early stage in the deliberations of the committee it was apparent that the provision of extensive scientific and technical resources both for education and industry in the county would create difficulties both in cost and storage space. It was agreed that microrecording, mechanical retrieval systems and document copying would need to be seriously studied if the service was to be efficient and economical.

To consider the problems arising from this aspect of the Library Service an Advisory Committee on Document Reproduction was formed and the County Council was fortunate in obtaining the help and advice of a group of people who have each had considerable experience in various applications of this work. The panel for tonight's meeting has been drawn from members of this Advisory Committee and comprises Mr J. Burkett (Head of Information Section, Hawker Siddeley Nuclear Power Co. Ltd), Mr D. T. Richnell (Deputy Librarian, University of London), and Mr H. R. Verry (H.M. Treasury, O & M Division).

Before inviting the panel to discuss the written questions which have been handed to us by the delegates, Mr Verry has agreed to summarize new developments in document reproduction.

NEW DEVELOPMENTS IN DOCUMENT REPRODUCTION

H. R. VERRY

To say something new about the document copying processes is not a difficult task because these methods are subject to considerable change. This provides interest to those of us who study them seriously but also makes it confusing for those whose interests are perhaps more general.

For me it is difficult to determine what is really new. Because of my position I am usually made aware of new developments long before they arrive on the market. Also I am often told about many which do not materialize.

To me something is really new, and I consider also important, when it compels me to modify or completely alter some of the statements made in my previous talks.

For a long time now I have been trying to make it clear that, although there are numerous machines available for diffusion transfer methods, all the paper was imported from either Germany or Belgium. Recently Kodak have introduced a paper for this method and tests have indicated that it is of a very good quality and able to give two copies from the same negative. It is also understood that Ilford Ltd have now introduced paper for the diffusion transfer method but I have not yet been able to test this paper.

Gevaerts have also demonstrated a special negative and positive paper which is said to give up to twelve positive copies. This material is not generally available, but it would be reasonable to suppose that in the near future the diffusion method will be capable of giving many copies from one negative. This may make it necessary to review our economics of these methods, but it may well be that because of the high cost of the positive paper it will not prove more economical than either the Verifax or the diazo methods.

One of the most important of recent developments has been the introduction of those methods which make a plate for offset lithography. The older processes are expensive in both material and labour costs. Pre-sensitized plates simplify the process but these are also costly.

Xerography brought a method easy and economical but the cost of the apparatus is a limiting factor except where many plates are required. The particular advantage of this method is that it can reduce or enlarge from the original copy and give paper plates with a very long printing life.

More recently both the transfer and the Verifax processes have introduced methods for plate making. The diffusion method transfers to a metal plate at a cost of about 3*s.* 6*d.* and Verifax to a paper plate for about 1*s.* 6*d.* Verifax is perhaps the simpler of the two methods but diffusion gives a plate which is able to produce many more copies.

In the early days of my teaching I emphasized that the document-copying methods were intended to make a few copies only from originals already in a suitable form for copying. Later I amplified that to say that the methods using diazo paper extended the economic limits because of the low cost of the material. Today I must emphasize that there is now no reason why any document already in a suitable form should ever be retyped, providing you have the apparatus to make the copies.

You can make a few copies cheaply by any form of document copying. With diazo you can provide more copies economically and by making an offset plate you can print a large number of copies on duplicating paper at a low cost.

It would therefore seem that the document-copying methods are able now to give either a few or many copies according to the process used and at a cost which makes typing uneconomical.

Quite recently Copycat have introduced a machine and a process called Dalcopier. This is a German method known there as Multicopy and is similar to the Mason Polyprint. The first copy is a negative. A single-sided original can be printed through the back, giving a correct reading negative. A double-sided original copied by the reflex method gives a negative which is reversed in tone and reading and must therefore be printed again by the transmission method using the same type of paper to produce the positive copy. The cost of the paper is about 3½*d.* per sheet 13 in. × 8 in.

The small Dalcopier apparatus is of an advanced design and has two chemical baths, one for developing and one for stabilizing the print. It is claimed that the

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prints are permanent but stabilization normally is not able to give a durable copy.

Some of the possible advantages of this method are that it is cheap, especially when the readable negative is acceptable, and also that the negative can be stored for further use if required. This point is of doubtful value, however, considering the high cost required to file, store, and search for the negative. It is questionable whether there is any economy to be gained by any filing methods for document copying. It is probably cheaper to recopy.

It is often said that no subject is more widely discussed than microfilm so, adding a few more words on this subject, I would like to say that recently there have been some important developments which may eventually affect our ideas on this method.

For many years microfilm has followed a vicious circle. We wanted to extend its usefulness particularly to the flat methods but there has been no reader available for this purpose. Recently Ross Limited introduced the ideal of all librarians, a reader able to read all forms of microrecordings. It is quite a good reader and fairly portable.

Recordak have also entered the opaque field. They not only produce microcards of a good quality but are manufacturing the excellent reader of the Microcard Foundation of America. In addition they are considering the introduction of the Filmsort methods of inserting cut film into cards. They are also making Microtape, which is an opaque strip printed from a reel of microfilm.

After a long period of almost stagnation it would appear that we are beginning to move to the wider fields. I hope that this will lead to a better appreciation and understanding of all these methods.

Most of you will recall that Freemont Rider, in his much discussed book *The scholar and the future of the research library,* said that it was conceivable that in the future librarians would have sixpenny slot machines for making photocopies available to the public. Two recently introduced machines may make this possible. The Minnesota Mining Company are selling a reader which is able to provide a copy in a few seconds and Recordak have one for 70 mm. which is able to give a positive copy in just over one minute. The principle of this machine could no doubt be extended to smaller film readers. Whether this will add to the librarian's worry or otherwise I cannot say, but it is possible that they could provide a very useful service.

Finally I would like briefly to mention the Kalamazoo strip index method. This enables information which is frequently amended to be kept up to date and then copied either by the photocopying machines or xerography and offset lithography.

For many years we have used the more elaborate Flexiprint method to produce all changes of addresses in the London area. The steel panels are of course very durable but the Kalamazoo method has made it possible to employ a similar device which is cheaper and can be contact-copied by photocopying methods.

Now no doubt I have left out the only developments which interest you. If so, since we have now a discussion forum, I am only too happy to help to the best of my ability.

DOCUMENT REPRODUCTION

DISCUSSION

Written questions were handed to the panel for discussion.

Mrs Lancaster-Jones (British Council) asked the panel what machine they recommended for the reproduction of periodical articles, bearing in mind the question of cost and simplicity of operation.

Miss Gosset (AERE, Harwell) asked which machine was best to install in a library to enable the library user to reproduce articles for himself.

Mr BURKETT said that the question of economy could not be answered without relating it to the particular establishment, its volume of copying, variety of work in addition to periodical articles, and so on. In some instances libraries sent all their requirements to a common service well equipped with a variety of machines to do different jobs efficiently and economically. Some libraries wished to use one piece of equipment for plate making, for offset litho, reduction in size, and other jobs as well as periodical articles.

Most libraries, however, needed to produce copies on the spot with equipment that was relatively simple to operate. In those circumstances the diffusion transfer process was probably the simplest to operate, although it was comparatively expensive for the first copy. With this process climatic conditions were not critical and speed of operation was good. As with many other processes, however, irregular use of equipment and consequently rather unskilled application led to wastage which considerably increased the basic cost per copy. Greater economy came from maintaining a central photocopying service where the operators were employed full time.

The following table compared the cost of making the first copy by different processes. A figure was also given for the fifth of five copies, because some processes showed to advantage when multiple copies were made. Most of the values given had been taken from Mr Verry's book, further study of which should be made for other values. Capital cost of equipment was not given and account was taken only of material and labour. The high initial cost of Xerox and Photostat would easily be offset in an establishment with a considerable flow of work. Other equipment varied between about £60 and £150, depending upon the degree of elaboration. Most processes had special book-copying devices available either now or in the near future.

Process	1 *copy*	5 *copies (per copy)*
XEROX	3¾*d.*	1¼*d.*
In many cases, using the VR unit, two pages could be reduced to one. Normal cost of exposure was 7½*d.* Five copies could be taken from the one exposure but each one was progressively weaker.		
XEROX/transparency/Diazo (2 pages in one)	4*d.*	1¼*d.*
XEROX COPYFLO (2 pages on microfilm at 3*d.* per frame, then enlarged at 6*d.* per foot)	4½*d.*	
	Service operated by Rank Xerox	
XEROX COPYFLO with transparency/Diazo	5*d.*	1¾*d.*
PHOTOSTAT negative copy	6*d.*	
positive copy	1*s.*	7½*d.*

THERMOFAX	6½*d.*	6½*d.*
Using special paper, each copy costs the same. Difficulty with some colours and inks. Care needed to prevent heat affecting copy.		
AUTO POSITIVE (Diazo)	6½*d.*	2¼*d.*
AUTO POSITIVE (ordinary)	10*d.*	6*d.*
VERIFAX	9¼*d.*	3*d.*
Copies become progressively fainter.		
REFLEX	10*d.*	6*d.*
Recent equipment eliminates wet processing and produces semi-dry copy at reasonable speed.		
DIFFUSION TRANSFER	10*d.*	10*d.*
TRANSFER/DIAZO	1*s.* 7*d.*	4½*d.*
Paper is available for making more than one copy from the negative sheet.		

ROSS MICROREADER enables a reflex copy to be made at about 7*d.*

THERMOFAX MICROFILM READER produces a positive copy fairly quickly at about 7*d.*

OZALID MICROFILM READER when fully developed should give a dyeline copy at less than 1*d.*

It had been pointed out by the panel that it was uneconomical to have a lot of equipment to do specific processes if they were sparsely used. In general, it was reasonable to state that there was not much difference between all processes for producing a single copy, the choice being dictated by multiple copies.

Mr RICHNELL said that he would try to give a simple answer to questions that were extremely complex. What the questioners had in mind, presumably, was the small library that wanted just one machine and one method of making copies. Such a library should install one of the many kinds of diffusion transfer machines. They were reasonably cheap, easy to operate, and gave a fairly satisfactory result for most purposes, although no single machine would give good copies for all purposes.

Mr VERRY recommended the diffusion transfer type of machine with apparatus designed for copying from books. When three or more copies were frequently required Verifax was more economical. He was very much against allowing unskilled persons to operate any machine. Where there was no one responsible breakage would result and a high volume of wastage would run away with money. The principle of '6*d.* in the slot' per copy seemed a desirable idea, but there was no process at present available in this country that enabled foolproof operation. The Thermofax reader was a simple copying device, but that used microfilm.

In general discussion on these two questions, the reflex method with fast paper was recommended for work with poor quality originals. There was a general demand for machines with which users could do their own copying and the Thermofax 'Premier' book-copier was recommended for this purpose, though it was pointed out that copies produced by this method were not fast to light. It was stated that, at Kodak, both paper and book-copying machines were used by all comers, a notice being displayed instructing the inexperienced to ask for a demonstration before using. It was suggested that if users were asked to pay for their own paper there would probably be little wastage. When copying costs were studied, consideration should be given to the relative salaries of the reader in a research organization and the print room operator or library assistant who did it for him, as this would affect the price per copy.

Mr WRIGHT thought that far too frequently only one problem of copying was considered when purchasing photocopying equipment. A thorough review of requirements was necessary, since the cheapest equipment might prove the least useful and the most expensive for the work it was able to handle. That was particularly the case where a number of poor originals had to be copied. There was no simple method of dealing with these, but photographic methods such as Photostat or xerography might be the best.

Mr J. K. Jackson (British Cotton Industry R.*A.) asked at what level of expenditure on postage, packing, etc., it would be profitable for a library to change its postal lending scheme to one based on the supply of photocopies.*

Mr BURKETT said that the table below attempted to arrive at the cost of sending library material to another library. Registered post was included because some libraries insisted on packages being registered. In addition to the cost of sending material there was the inconvenience of reference material being out of use for a time and the possibility of loss or damage. On the basis of these costs it was suggested that short articles should be photocopied and long articles sent in the original form.

	Loose periodicals		*Bound volumes*	
	Ordinary post	Registered post	Ordinary post	Registered post
Post	1*s.* 0*d.*	2*s.* 0*d.*	2*s.* 9*d.*	3*s.* 9*d.*
Packing and material	2*d.*		5*d.*	
Loan forms, clerical effort, etc.	6*d.*		6*d.*	
Total cost (one way only)	1*s.* 8*d.*	2*s.* 8*d.*	3*s.* 8*d.*	4*s.* 8*d.*
PHOTOCOPIES: Number of pages for approximately equivalent cost less 4*d.* for package and post.				
Xerox (2 pages per exposure)	5	8	12	15
Photostat (negative copy)	3	5	7	9
Thermofax	3	5	7	9
Verifax reflex and diffusion transfer	2	3	4	5

In some of the above processes, taking the estimate to the nearest page shows a slight excess over equivalent postage. This is offset by the advantage of retaining the printed materials.

If account is taken of the total cost to both libraries, but excluding Regional Bureaux cost, then the number of permissible pages can be doubled.

Mr WRIGHT thought that in the long run microrecording of the larger articles or documents might be the cheapest and quickest method of transmission.

Other speakers pointed out that the decision whether to borrow or copy often depended on the nature of the original. If this was more than three pages it would probably be cheaper to borrow, unless it was valuable material which had to be insured in transit.

Mrs M. Spence (Cerebos Ltd) asked if there had been any clarification of the Copyright Act with regard to photocopying; had there been any prosecution which would shed light on the position.

Mr RICHNELL said that there had been no clarification of the clauses of the Copyright Act dealing with photocopying, in the sense of testing the clauses in a Court of Law. He could only suggest a common-sense approach to the matter. He was one of those who had given evidence for the Library Association to the Departmental Committee of the Board of Trade that was set up to consider amendments to the previous Act. They had endeavoured to get libraries of industrial firms included among the libraries which could make photocopies of periodical articles and so on without permission. They had tried again during the Committee stage of the Bill in the House of Lords, but had been unsuccessful. At no time had they pressed for permission to make multiple copies. The librarian should proceed by the light of common sense and fair dealing. If he should attempt to use photocopying as a means of multiplying copies of articles instead of purchasing extra copies of journal parts that were in copyright, he would be guilty of an infringement of the Act. If, however, he acted within the limits of fair dealing for private study and research, there was never likely to be a clarification of the Act in a Court of Law.

Mr Agard Evans (Ministry of Works) asked what methods were suitable for the reproduction of six catalogue cards from an original which was handwritten, the final copy to be a facsimile typescript.

Mr BURKETT said that he would like to widen the question in order to cover other aspects of producing catalogue cards, in particular the problems of the many small industrial libraries.

The main problem to be faced by small libraries was the lack of typing effort, which made it desirable that they should be able to produce a bulletin, followed by multiple copies of cards, from one typing.

Bulletin and cards (one typing only)

HECTOGRAPH. Assuming that only a short run of the bulletin was required, after the sheets were run off the master would be cut into strips and it would be a simple matter to hand-feed the cards.

OFFSET LITHO. This process was particularly suitable if a good finish and a long run were required. If necessary gummed sheets could be used. Items were cut up and stuck on to cards or the sheets of a sheaf catalogue.

WAX STENCIL. Same procedure as offset litho but more expensive. (For 100 copies of a bulletin page, cost per page: offset 0.37*d.*, stencil 0.42*d.*; Mr Verry's figures.) Cutting and fixing entries on cards took about half as long again as the through run by the hectograph process, and there was the possibility of carelessness resulting in uneven appearance.

WAX STENCIL AND OFFSET LITHO. Typing was spaced to suit the size of card. Machines were normally set to take a particular thickness of paper, and consequently the sequence of production had to be varied to allow adjustment: bulletin pages—cards; cards—bulletin pages, and so on. One objection to this method was the difficulty of cutting the sheet of card to exact sizes. With the rotary and flat-bed wax stencil duplicators it was possible, however, to lay a card on the stencil and produce an impression by hand pressure. Such a method sounded crude, but it did work.

Cards only

ADDRESSING PLATES.

WAX STENCIL. Using the 'Printomatic', a very low-priced machine, (about £6), small offcuts of stencil could be used to produce up to 6 in. × 4 in. cards, thereby eliminating the problem of cutting.

OFFSET LITHO AND WAX STENCIL. As in wax stencil and offset litho above. Cutting necessary. This process was used in such organizations as the RAE, where reports were accompanied by a sheet of catalogue cards. The *Brown Boveri Review* has solved the problem of uneven cutting by perforating the sheets.

MICROFILM. Rank Xerox operated a service by which catalogue cards were reduced on to 35 mm. film and subsequently enlarged by Copyflo. This was particularly useful for cards bearing sketches and hand-written non-European characters (Chinese, Arabic, etc.). The main objection was the difficulty of producing exact sized cards by cutting up the sheets. Cost per card was approximately 2*d.*

For long runs of cards, Copyflo could produce an offset master sheet ready for printing. It was also possible to use the automatic 16-mm. microfilming units for cards, and Kodak maintained that it was possible to overcome the difficulty of registration, an important factor for ease of final trimming. Printing could also be carried out by continuous processing, on to double-weight paper which was approximately equivalent to card thickness. A rapid process such as this was economical only for long runs of cards, such as the reproduction of union catalogues and the like.

General discussion

In general discussion, it was reported that the Heating and Ventilating Research Association had been producing catalogue cards by Azoflex, from a master transparency typed on stiff tracing paper and duplicated on to pre-sensitized cards by Azoflex. It was best to type the master over a reversed carbon. The masters were stored in classified order and a bibliography of any section of the classification could readily be compiled. The only snag was that the masters were not permanent. They had to be kept carefully in drawers and not exposed to strong light, and under such conditions might have a life of as much as twenty years.

Other materials recommended were wax stencils, typed, run off, and stripped up on cards; sticky Dupl-o-mats; and Cardmasters, available from Chicago, Illinois, though possibly not obtainable in the United Kingdom.

Mrs S. Dixon (Heating and Ventilating Research Association) asked the panel if they knew anything of the use of photographic papers with dyeline processes such as Azoflex. She thought that with the use of papers such as Ilford Inverpos the expensive reflex foil could be eliminated, but there seemed to be little information available. She wondered whether this possibility had been investigated by Mr Verry.

Mr VERRY replied that the Azoflex method of making translucent masters was good but expensive. Direct positive papers were cheaper and quite satisfactory. Their wider use for this purpose had been restricted because the thicker papers made very slow printing masters and the thin ones were often difficult to process in the automatic machines. The newer processing apparatus was said to be quite satisfactory with all papers. It was also possible to eliminate trouble with the older machines by feeding two sheets back to back through the apparatus, or, where one sheet was processed, by bending back one corner of the sheet.

Miss P. M. Tench (UKAEA Radiochemical Centre) asked for a report on the present position of the development of equipment for the reproduction of full-size copies of microcards and microfilms.

Mr BURKETT gave the following particulars:

Microcard

The latest design in apparatus for viewing all forms of transparent and opaque microrecordings was the Ross Microreader. Using a x15 lens, one page of a microcard filled the 6 in. × 7 in. screen. For extra small records a screen extension unit increased magnification to x18, whilst for 35-mm. recordings an alternative lens of x10 magnification was available. Any of these enlargements could be copied by using a special photographic attachment (additional £9 15*s.*) accommodating 8½ in. × 6½ in. paper. A reflex negative was produced within a few seconds, from which a photographic positive was made. The final copy was quite good, but definition depended entirely on the quality of the original which had been used for the microcard.

As far as the Microcard Foundation Reader was concerned, the model which was being manufactured by Kodak, there seemed to be no reason why a photographic enlargement could not be made, but the makers did not yet claim that this was possible.

Microfilm

The Thermofax Microfilm Reader-Printer, costing £385, gave an enlarged copy in about eight seconds from pressing a button. The machine was loaded with a roll of paper giving 250 exposures of 8 in. × 10½ in., and a print developer was also required. The finished copy had not the same quality as reflex but wet processing was unnecessary as with the Ross method.

Ozalid had a Diazo reader/printer, which cost about £350, for printing enlarged microfilm images on to dry developed Ozalid Fastline paper. It is understood that certain difficulties, particularly the light source, had to be completely overcome before the product was entirely satisfactory.

The Dagmar microfiche-reader, which could be adapted to microfilm (and to microcard), could be used to make photocopies on Duostat paper.

Xerox Copyflo was a continuous process for producing microfilm enlargements at a relatively low cost. The equipment was very costly, but a customer service was operated in London. The average price per foot of copy paper was 6*d.*, which normally allowed two pages of text. A 200-page book would cost £3, including the labour of cutting and cost of a simple binding. Although long runs of microfilm were preferred it was possible to send short lengths, but a minimum charge was imposed.

Mr Graham (Watford Technical College) asked how far recent developments justified the claim that there was no longer any such thing as an out-of-print book.

Mr RICHNELL said that such a claim was not justified. The introduction of xerography had immensely extended the possibilities of obtaining workable copies of out-of-print books, but the cost remained disappointingly high, although this was a secondary factor if the book was of vital importance to a library. The primary drawback to the method was that the quality of the reproduction could be poor, and half-tone, colour and certain other kinds of illustrations could not be reproduced. Since any other method of reproduction would be prohibitive in price, works in which such illustrations were of any importance remained effectively out of print.

ADVANCED TEXTBOOKS FOR USE IN INDUSTRY

A. R. N. ROBERTS
Education Officer, Sales Regions, Imperial Chemical Industries Ltd

34th Annual Conference, Scarborough, 7th October 1959

THE word CONFERENCE is one of the most misused in the language—as many of us know to our cost. With organizers less skilled than the officials of Aslib, all too often it means that Professor X presents, at great length in the most dogmatic manner possible, a one-sided view of his subject to an audience containing many of equal or greater knowledge than his own. The lecture is then opened up for questions, the audience being told in advance that Professor X has to leave in a quarter of an hour for a far more important meeting than the present one. The Professor then re-phrases each of the three questions he has time for, explaining in his own words what the questioner really means or ought to have meant. Then in reply to a grovelling expression of thanks from the Chair, Professor X says that he has been immensely helped and encouraged by the opportunity of conferring with so many distinguished people who have given so much thought to the subject, following which he hastily leaves the platform disconnecting the microphone with his left foot and overturning the chairman's water bottle, as he bundles his voluminous notes into a brief-case of which the zip fastener has long since expired.

You will be relieved to know, ladies and gentlemen, that I come in a much humbler mood than the Professor. I was glad to accept Mr Wilson's invitation to bring forward for discussion the subject of textbooks for use in industry, because I do not think there can be any audience better able than yourselves to define the needs of the industrial student, to determine in what fields supply falls most short of needs, and to remit, to publishers and to industry, practical suggestions for meeting those needs.

I am not myself a librarian, a scientist, or a professional educationist. I have, however, earned my living for some time in industry, and I am now concerned with training within ICI. I also give a good deal of my spare time to the work of the Royal Society of Arts, which for two hundred years has been seeking to improve the equipment of young people for commercial life. The society has a committee, of which I am chairman, to consider matters of public interest in which the society should either itself take action, or recommend another more appropriate body to do so. Two years ago, a member of my committee who is an engineer by training, raised the question of current British textbooks for the industrial student from two points of view—first the English in which they are written, and secondly, the extent to which they are, or are not, individually up to date and collectively comprehensive.

As to the English in which textbooks were written, another of our members had recently seen an O-level G.C.E. paper in which the examiners had invited young England to explain the meaning of the phrase 'Don't count your chickens before they are hatched'. One boy replied, 'This means you should not think that something will happen as a result of something else if the latter has not happened yet, because that might not happen, thereby preventing the other happening'. The committee felt that there was every indication that this boy with his inborn talent for making the obvious obscure would shortly become the author of a textbook.

Someone, we felt, must quickly catch him and his like and set down before them the better example of, for instance, Michael Faraday and T. H. Huxley, for making the obscure obvious.

Let us remember too that a twentieth-century Faraday or Huxley would have to contend with the fact that in industry we need vastly more group leaders today. (In ICI the proportion of black-coated workers has sharply increased in the last decade.) Many of these leaders will come from families where there is no established background of study, and all of them from homes where the vivid, time-economizing techniques of radio and television will have awakened impatience with the heavy, the laboured, and the prolix. In this connection you will have noticed last week the closing plea of Sir James Gray, President of the British Association, that scientific writers should sometimes try the effect of a more light-hearted approach—not disdaining, for instance, the use of the cartoon.

To secure the better writing of textbooks the collaboration of the City and Guilds Institute, with whom the RSA had long been in friendly relations, was invited. The institute agreed to set up an advisory committee on Technical Authorship. This committee, widely representative of industry and the teaching profession, produced with commendable speed a scheme, since adopted by the City and Guilds, for an Intermediate and a Final Examination, the course for which would take four years in all. The syllabuses include:

The importance of a mastery of English, including accuracy, conciseness, orderly development, and coherence.
The work, outlook, and mental equipment of the technical author.
The work and methods of the technical illustrator.
Methods of reproduction.
The use of tables, graphs, and diagrams.
The art of gathering information from other persons and from books.
Preparing matter for the printer, and the reading and correction of proofs.
The economic and legal aspects of publication.
The administration of a technical publications department.

This formidable list of the author's responsibilities may well deter the faint-hearted from even making the attempt to write a textbook. So be it. It will, I am certain, ensure that those of the students who gain both the intermediate and final diplomas will write much better books than, uninstructed, they would have done. Incidentally, those who seek these diplomas will find an extremely comprehensive and practical guide in a new Chapman & Hall publication *The technical writer* by J. W. Godfrey and G. Parr.

Let us now turn from the question of training people in the better writing of textbooks—of the need for which I imagine few of you will dissent—to the situation in which the industrial student, who has probably already acquired a degree or diploma in his own field, finds himself when he wishes to take his studies further.

First we must remember the increasing importance of books to such a student in these days of ever-more-rapid technological advance. It will always be true that, in mastering a job, the actual doing of it, and the watching those more experienced than oneself, will be important ingredients in the learning process, but the rate of discovery and of change is so great, and the sources of new ideas are so diverse, that the best master in the world cannot replace the student's need to study the written word.

With the losses in capital resources and in political power that two world wars have inflicted upon us, one of our supremely important remaining resources is the skill and inventiveness of our young research workers and industrialists, but this skill and resourcefulness must be fed by well-written up-to-date and reasonably priced textbooks. It was the first impression of my committee that in many fields such books were lacking.

Now, when the Royal Society of Arts decided to discuss this aspect of the problem with the Examinations Committee of the FBI you,* sir, having a much more orderly and logical mind than mine, said, 'I think my committee would like to know how far the RSA's *feeling* that there is a shortage of good English textbooks in many fields—how far this feeling is shared by librarians in industry, research associations, universities, technical colleges and the like.' Accordingly your committee gave much time and thought to the elaboration of a questionnaire covering remedies as well as needs which you addressed to ninety-two suitable people in the spheres I have mentioned. Eighty-nine replied—a remarkable tribute to the prestige and persuasiveness of the FBI!

Question No. 1 was, 'Is there a shortage of up-to-date textbooks in those fields of science and technology in which you are interested?' To this question sixty-six responders said, Yes, and twenty-three said, No.

Among subjects where good advanced textbooks were lacking, those that were repeatedly mentioned were:

Electrical engineering
Chemical engineering
Plastics and synthetic resins
Metallurgy and allied subjects
Nutrition and food technology.

I hope you will accept the answers to the questionnaire as demonstrating beyond doubt that there *are* important gaps in the range of home-produced textbooks available to the British student.

Many of the responders to the questionnaire speak of excellent American, German or Russian textbooks being available in some instance where a home-produced book of quality is lacking. I want, therefore, to divert your attention for a moment from the needs of our home students to the consequence to our national prestige, and in some degree to our overseas trade returns, if students in the developing nations of the world perforce have their attention directed elsewhere when seeking the up-to-date technical information they need to equip themselves in their professions.

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* Mr P. J. C. Perry, Head of Education and Industrial Research Sections, Federation of British Industries, who acted as Chairman for the session.

Turning back to the home student, I think the gaps in his range of up-to-date textbooks are indeed greater than appears at first sight. Our head office librarian, whom I consulted when preparing this talk, took off her shelves two or three books each having such wording as 'revised edition 1958 or 1959' which were, in fact, books first conceived and planned in the twenties or the thirties and only patched up since. They now need complete rethinking.

If we may assume that there *are* regrettable shortages in the range of textbooks for the post-graduate student, why is this so?

The responders to the questionnaire suggested that there were thirty-three reasons. Not to test your patience too severely I will mention only the five reasons which were most frequently or most cogently advanced:

1. High cost of production and inadequate return to publishers.
2. Small reward for the writer.
3. The inevitable rapid obsolescence of any new textbook, heightened by delays between completion of text and publication.
4. The difficulty of youngish men—not yet at the top in their own businesses—to get the necessary time to write.
5. The natural inclination of industrial firms to maintain secrecy on certain topics.

I should like to deal with these five difficulties and to make suggestions for their solution, some of which arise from replies to the final section of the questionnaire, and some which result from discussions I have myself had with scientists and librarians since accepting Aslib's invitation to address you.

Shall we take together the questions of small return to the publisher and to the author combined with, in many cases, a high selling price?

As everyone here knows, a large part of a publisher's *costs* will remain unchanged whether he prints 1,000 or 10,000 copies of a book. Again, the number of copies which he sells, except perhaps in the case of a few dozen books a year by outstanding authors, is directly related to the price of issue. When I was with Plant Protection Limited we sponsored a book called *The rose in Britain*, which was very costly to produce, as it was illustrated in full colour. It would have been good value at 25*s.* and perhaps 5,000 would have bought it at that price. In fact, we priced it at 17*s.* 6*d.* at which figure we sold 15,000 copies and it made a good deal more money for all concerned than we should have done at the higher price. Books that the student can or will only *borrow* if the price is above a certain figure he will *buy* if the price is below it. Now without sharing Byron's view that Barrabas was a publisher, he cannot be a philanthropist on all five days of the working week, nor will he make too many speculative ventures if he wishes to remain in business. So we must be practical in our suggestions. I think, however, we can safely say that far too many textbooks are issued that do not sell more than 1,500 to 2,500 copies. For this there are a variety of causes.

Firstly, the book may be in conflict with another recently issued on the same theme. This morning I particularly don't want to name individual textbooks, lest I offend the publishers whose collaboration I shall shortly be inviting, so I will mention in the field of biography the two lives of Anne Brontë which have appeared in 1959. One can, I think, safely conclude that if publisher B had known that publisher A had also commissioned such a life, he would himself have refrained from doing so. I think you will agree that in the world of textbooks such clashes are not infrequent. Secondly, the book may be inadequately heralded. I have talked to industrial librarians who speak of representatives who still try to sell by waving a book jacket before the buyer. My own daughter is a designer of book jackets so I must not under-rate this protective and attractive art. I will only say that I think a full summary of a textbook's contents and angle of approach placed with a wider range of prospective buyers would not only aid ultimate sales, but would ensure an initial subscription which would help the publisher in placing his printing order.

Thirdly, a book may be too expensively produced. In these days of swift technical advance, Rolls-Royce durability in binding and in paper may be an unnecessary luxury. This is not the place to pursue this thought in detail, but Pelican books with their paper backs and their typographical excellence are twentieth-century productions of which neither publisher, author nor reader need be ashamed. The possibility of issuing a lengthy work in two or three parts in this modest style should not be overlooked by even the most staid of publishers. Thirty years ago I well remember H. G. Wells's *The world of William Clissold* appearing in three parts at monthly intervals. For durability's sake it would have had to be much more expensively produced if in a single volume.

Now as to the writers. Let us first consider their material rewards. Royalties are inevitably limited to a low percentage rate if the publisher will barely meet his costs with an expected sale of a few thousand copies only; they can mount steeply if a larger subscription can, by the methods we have discussed, be assured. But I do not think the man in his thirties overvalues the cash return of his writing, and it is the potential author at this age level that I think, above all, we want to find.

The authorship of a textbook that establishes itself brings many other rewards. If the writer is a member of the staff of a university or of an industrial firm, his prospects in his career and his standing with other workers in his own field will be enhanced, and his book will make valuable contacts for him at a higher level than that of those whom he normally meets. I refer particularly to the younger man here, and I think that the pace of change and the need for specialization in smaller scientific fields which this enforces upon us, does mean that we should do more to encourage the writing of textbooks by those who have *current* first-hand experience of research or manufacturing processes. The worker whose name has become a household word, and who thus springs to the publisher's mind, is almost certainly nearer sixty than fifty and in all probability he has become more of an administrator than a direct worker in his field. Alas, the rust that accumulates with our grey hair!

How can publishers get at the up-and-coming potential writer? Others here will, I hope, speak of such men in academic circles. Let me say a word about the youngish man in industry who has a book inside him, if I may so express it. He is, we will say, James Thornton, thirty-five years of age, a married man with two children. Thornton's observation of the careers of the senior men in his company suggests that if he, Thornton, does not in the next seven years or so win some notable promotion, he may remain more or less in a rut for the rest of his working life. Thornton is already the head of a small department, and is also called upon for technical service to his company's customers, frequently at home and sometimes abroad. An unusually enterprising publisher has heard of him, and sounds him as to his willingness to write a new textbook.

Thornton would like to undertake it, knows that he has the technical knowledge at his finger tips and some powers of exposition through the written word. However, the publisher wants delivery of the manuscript within twelve months. Thornton looks at his engagement book, already full of entries for the first half of 1960. He himself is engaged on a piece of research which will involve him personally and require his constant stimulus of the small team of his co-workers.

So what happens? One of three things—and I do speak from some knowledge here. The first is that Thornton says to the publisher, 'I am flattered by your invitation, but during the early part of next year I simply shan't have a minute.' In this case the publisher then looks round for another Thornton somewhere else, who may or may not exist. On the other hand, Thornton may simply bank on a miracle whereby, somehow, more time to write will become available. He agrees to deliver his manuscript by October 1960, and in the event has only a third of the book written by that date. The publisher reluctantly accepts a postponement. By the time Thornton's manuscript is delivered, another publisher has issued an inferior work covering half the field of Thornton's book, and thereby seriously reducing its potential sales. A third possibility is that Thornton goes to his boss and says, 'I think you will be pleased to hear that Textbooks Ltd have asked me to write something for them.' The managing director replies, 'Splendid, my dear chap. You must let me see it when it comes out. (Pause) I am sure you will not let your literary work interfere with anything else.'

Thornton feels that this does not make a very promising opening for the request he had intended to make, that he should be temporarily relieved of a number of bits and pieces of responsibility which, without detriment to his company's interests, could, he thinks, be transferred to other shoulders. He therefore gives a sickly grin and the required assurance that, so far as he is concerned, nothing so frivolous as authorship shall interfere with honest work. I plead with industry to liberate James Thornton's pen.

Now let us turn to *secrecy* as an obstacle to publication. As a young man I was a salesman with a firm of paint manufacturers. One's competitors were then regarded as little better than pirates. They were all either charging high prices for inferior goods or, alternatively, seeking to steal one's own trade by resorting to price-cutting to 'get in', following which they would, in due course, have the customers at their mercy and rook them accordingly. Our representatives were on no account, if they had the misfortune to meet the representative of a competitor, to discuss any subject from which the competitor could conceivably draw a hint that would be of advantage to him. Even the weather should be discussed on a national rather than a local basis.

Since then a more liberal and a more rational attitude has become general. All reasonably enlightened companies working in a certain industry tend to feel that each of them will benefit if the industry as a whole advances in public repute, either because of the thoroughness of its research work, the improvement of its manufacturing processes, or the quality of the men it employs. There are, of course, some trade secrets still, but the possibility that a textbook will reveal much to the top experts employed by one's competitors is a great deal less than a generation ago, when it was still possible for leading companies to acquire their scientific knowledge secondhand.

I was once with a company whose manager was always said to have married a chemist to avoid engaging one!

I beg industrial leaders to recognize their national responsibilities in this matter. Industrial salaries as compared with academic ones lead many of the country's best brains into industry. Where these good men are also endowed with powers of exposition, they should be given due opportunity to write. The equivalent of a sabbatical year may be difficult to arrange, but some relaxation of his normal work is badly needed by the writer. Work done at the end of a long day, or in railway trains and hotel bedrooms, is unlikely to be work of the first quality.

The employer will not be acting altruistically only. If the book is a good one, it will benefit younger employees of the company now and in the future. Again, the company's standing in its own field will be enhanced by the fact that a valuable contribution to the literature has been made by one of its staff. Finally, every company needs men with facility with the written as well as the spoken word, and it is practice as well as natural aptitude that brings that facility. Every day in every year puzzled employees peer at their company's notice boards and mumble as they turn away, 'I wonder what this really means'. 'Bright is the ring of words when the right man rings them' we have been told. Dull is the thud of words when the wrong man heaves them!

A major problem is that of a subject which requires a new textbook in each of two aspects. We have already noted that it often happens that two publishers are almost simultaneously commissioning works on aspect number one, but this is not the end of the trouble. No publisher may be commissioning a book on aspect number two. The result of the simultaneous action on aspect number one is that neither the publishers nor the authors make a financial success, and that librarians and students have the problem of making a wise choice between two books similarly described. In the second field there is an unsatisfied thirst for knowledge—or a thirst that can be satisfied only by resort to a foreign textbook. Now these problems of overlap and neglect are, as a result of the findings of the FBI Committee which have been brought to their notice, to be seriously considered by the Scientific and Technical Committee of the Publishers' Association. We must not pretend that it will be easy to secure co-operation between publishers, who exist like the rest of us in a competitive world. However, as I have earlier suggested, there are strong bread-and-butter arguments for them to seek to co-operate. Here I think that trade and research associations could help by joint representations on book needs to the Publishers' Association. I note with pleasure that the Textile Institute and the Institution of the Rubber Industry are considering the gaps that exist in their own literature and will either themselves sponsor textbooks or encourage publishers to commission them. May their example be followed.

Another way in which research associations and professional institutions could help would be by the selection and collation of the best papers contributed to journals in their field for publication at, say, six-monthly intervals. This would help to meet the argument that the volume that takes, say, two years to write and months to produce, must be out of date in a very short time.

Responders to the questionnaire often mention the superiority of American, German, and Russian textbooks to our own in certain subjects. How difficult it would be for our publishers, having secured co-operation amongst themselves, then to secure some co-operation with American publishers, I dare not hazard a guess, but since the United States appears belatedly convinced that peaceful coexistence with *Russia* is a practical possibility, we should not despair of success. So far as textbooks in other languages are concerned, here too I think that research associations could be of service in calling publishers' attention to the few outstanding works which would both merit translation and for which, if translated, a reasonable sale could be expected in the English-speaking world. Could the Publishers' Association build up a team of technical translators?

Let me close by returning to the international aspect of this question of securing up-to-date and well-written advanced textbooks by British authors. We have no shortage—as the award of Nobel prizes to British subjects since 1945 has shown—of keen, profound, and resourceful scientific brains. In enormously costly nuclear weapons our production must lag behind that of the United States and Russia. In the battle of the books at some points we *are* lagging, but we need not if librarians, industrial leaders, educationists, and publishers join in closer collaboration than they have yet achieved.

At home and abroad eager students reach out for the books which in their hands will bring scientific achievement more fully and more quickly to the service of mankind.

DISCUSSION

Discussion centred round the economics of publishing and the need for better quality of authorship. Several speakers were of the opinion that remuneration of authors was generally inadequate, but Mr Roberts said he thought prestige scarcely less important to a young author than financial reward. It was stated that one large industrial organization was encouraging staff to write books regarded as necessary to the industry and, in some cases, was giving monetary incentives.

Publication of symposia was criticized on the grounds that they lacked cohesion, but it was pointed out also that there were certain classes of book which could not be written by a single author. It was stated that the cost of distribution of books was approximately equivalent to the cost of production, and that the price of any publication was largely dependent on the number of copies that could be sold. The competitive nature of publishing and bookselling ensured that profit margins were reasonable. It was suggested that sales of standard textbooks might be increased if universities provided their own libraries of such works, just as they provided laboratory equipment.

Summing up, Mr Roberts said that if no more than three changes of attitude could be brought about, future textbooks would be considerably better than at present. The first was that the author should think of style as well as content and should be modest enough to check that his script was intelligible to the intelligent laymen. The second necessary change was for publishers to be more receptive to new methods of commissioning and producing books. Thirdly, industry should be more liberal towards its young authors, encouraging them in every way to write the books for which there was a known need.

Closing the session, the Chairman said that discussion during the session and in the FBI's Working Party had shown that there was room for more and better advanced textbooks. That needed to be said loudly and often. It was also possible that readers did not always know of the existence of all the books useful to them. With this in mind, the FBI had suggested that the Publishers' Association should consider establishing a book centre and a number of travelling displays. One result of the activities of the FBI Working Party was that the Scientific and Technical Publishers' Group of the Publishers' Association had been resuscitated and it was to be hoped that the group would now consider seriously the matters which had been discussed.

BRITISH UNION-CATALOGUE OF PERIODICALS

FIFTEENTH ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDED 31ST MARCH 1959

WORK on the new volume supplementary to the *British Union-Catalogue of Periodicals* has proceeded according to plan during the year. For most of the time attention has been concentrated on the preparation of a basic bibliographical list of the periodicals which have appeared since the original *British Union-Catalogue of Periodicals* was completed. This list has been founded principally on the accessions, by copyright and purchase, of the British Museum and other selected libraries, and now contains particulars of about 30,000 periodicals, a great number of which are new since around 1950.

All libraries represented in the *British Union-Catalogue of Periodicals* have been requested to continue their co-operation, and to supply the necessary particulars of their holdings of periodicals. The majority have already replied favourably. In addition, a number of important libraries not hitherto represented have expressed their desire to be included in the new volume.

A large number of lists have been received from our co-operating libraries, and the work of incorporating these is in progress. It is satisfactory to be able to report that in most cases it has been arranged that these 'main' lists are to be followed by regular supplementary lists at appropriate intervals, keeping our information constantly up to date. This arrangement is important in view of the proposed establishment of the *British Union-Catalogue of Periodicals* as a permanently continuing organization.

It is also most satisfactory to find that some of the larger libraries which were unable, owing to post-war difficulties, to co-operate fully in the past are now giving their complete support. This has enabled us to dispense with much of the field work previously necessary.

The future of the *British Union-Catalogue of Periodicals* organization and the possibility of its integration with the National Central Library have been under review, and preliminary consultations have taken place.

The Council has suffered a loss by the resignation of Mr R. H. Hill, MA, FLA, as a consequence of his retirement from the office of Librarian and Secretary to the National Central Library. Mr Hill has been a member of the Council since 1945, and was its Chairman during 1947–9. We would like to express our very great appreciation of the valuable guidance he has given to us over this long period.

The National Central Library has appointed Mr S. P. L. Filon, BSC, FLA, now its Librarian and Secretary, as its representative on our Council.

We also suffered a grievous loss by the death, on 6th March 1959, of Mr

C. C. Barnard, BA, FLA. Mr Barnard represented the Library Association, and had been a member of the Council since its formation, and will be greatly missed.

We are gratified to know that Mr F. C. Francis, CB, MA, FSA, one of our original members, has been appointed Director and Principal Librarian of the British Museum. We offer our warm congratulations to him.

Our grateful thanks are due to the Nuffield Foundation for making our work possible by its generous grant; and to the Trustees of the British Museum for continuing to provide the accommodation and facilities so necessary for that work. Our thanks are also due to the Editor and his staff for their assiduous service; to members of the staff of the Department of Printed Books of the British Museum who have given much valued assistance; and to the librarians of our co-operating libraries who have gone to much trouble to provide us with the information we need.

INCOME AND EXPENDITURE ACCOUNT YEAR ENDED 31ST MARCH 1959

1958 £	£		£ s. d.	£ s. d.
		INCOME		
	1,622	(Advance on account of Royalties from Butterworth & Co. (London) Ltd)	— — —	
	1,583	On account of Grant Receivable from the Nuffield Foundation	2,666 13 4	
	3,205			2,666 13 4
		EXPENDITURE		
51		Administrative Expenses	49 0 0	
2,341		Salaries	2,460 9 3	
35		Field Work	12 5 0	
15		Travelling and Conference Expenses	39 5 2	
11		Editorial Expenses	10 17 5	
8		Stationery	56 13 0	
3		Audit and Accountancy	3 3 0	
5		Sundry Expenses	6 0 4	
	2,469			2,637 13 2
	£736	SURPLUS FOR YEAR carried down		£29 0 2
(Deficit)	90	SURPLUS AT 31ST MARCH 1958 brought forward		645 16 2
	736	ADD: SURPLUS FOR YEAR ENDED 31ST MARCH 1959 brought down		29 0 2
	646	SURPLUS AT 31ST MARCH 1959		674 16 4
		Represented by:		
764		*Cash at Bank and in hand*	781 9 10	
118		*Less*: *Sundry creditors*	106 13 6	
	£646			£674 16 4

We have examined the above Income and Expenditure Account with the Books and Records of Aslib and certify that it is correct and in accordance therewith.

Warwick House,
Warwick Court,
Gray's Inn,
London, W.C.1.
29th October 1959.

REYNOLDS, ADAMS & LAKE,
Chartered Accountants.

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WARD, DAVID B.
Periodical storage revisited. *Wilson Library Bulletin,* vol. 34, no. 3, November 1959, pp. 210–11.

All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d.* per word, minimum 5*s.* An additional charge of 6*d.* is made for the use of a box number.

MARTIN GREENWOOD, FIL, 73 Undergreens Road, Barrow-in-Furness, translates science and technology from German, French, Spanish, Italian, Dutch, for major professional engineering and industrial establishments in Britain and Europe.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

TECHNICAL TRANSLATIONS, from German and French, promptly executed by experienced man (on Aslib register). H. B. Andrews, 43 Wansunt Road, Bexley, Kent. Crayford 23071.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC(ENGIN.), FIL, 140 Wightman Road, London, N.8. Tel. STAmford Hill 8564.

Appointments vacant

ESSO PETROLEUM COMPANY LIMITED require a female librarian aged between 23–35 to take charge of a small, specialist library in their Tax Department at 5 Queen Anne's Gate, S.W.1. This is a responsible position providing considerable scope for initiative. A library qualification is preferred; secretarial experience would be an additional advantage. Salary according to qualifications. Contributory pension plan. Please apply in writing to the Manager, Recruitment & Training, 16 Charles II Street, London, S.W.1.

LIBRARIAN. An expanding commercial and technical intelligence department needs a

chartered librarian to take over the company's library. The successful applicant should have had sufficient industrial experience to have acquired a mature and commonsense attitude to library techniques. Some of the librarian's time is spent in answering non-technical inquiries and in extracting and collating certain information systematically. If you are aged about 30, have the necessary qualifications and experience, keenness, drive, experience in managing staff, and a good personality, write, giving full details to the Staff Manager, The Morgan Crucible Company Ltd, Battersea Church Road, London, S.W.11.

MINISTRY OF POWER, HQ, London, require TECHNICAL EDITOR (Experimental Officer) preferably under 31. Duties—abstracting scientific articles; preparation of surveys of current literature; briefs and memoranda on fuel and power subjects. Minimum qualifications HNC or Inter BSC or equivalent. Some knowledge of terms used in fields of fuel and power, and ability to translate French and German essential; knowledge of Russian an advantage. Salary £1,005–£1,233 (men), £985–£1,203 (women). Five-day week. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting A.572/9A. Closing date 29 January 1960.

THE MOTOR INDUSTRY RESEARCH ASSOCIATION. Applications are invited for the following post: Translator for the preparation of full translations or abstracts in good English, principally from German technical publications, and generally to assist in the work of the technical information department. Candidates should have a sound knowledge of German and preferably some technical background related to automobile engineering. Attractive salary for properly qualified candidate, pleasant working conditions, superannuation scheme. Applications to Director, Motor Industry Research Association, Lindley, nr Nuneaton, Warwickshire.

A PHOTOGRAPHIC LIBRARIAN (technical) is required at the ATOMIC ENERGY RESEARCH ESTABLISHMENT, Harwell, to take charge of the photographic library containing about 105,000 negatives, prints and slides to which about 15,000 additions are made annually. The librarian will work in close contact with the main library. Applicants should have GCE at A level or equivalent qualifications and should be qualified librarians with considerable experience of a photographic library. Experience in scientific information work or wide scientific interests is desirable. Salary: within the range £500 (at age 20) to £1,260 p.a. according to age and experience. Housing and superannuation schemes. Please send a POST CARD for details to Group Recruitment Officer (1533/205), UKAEA, AERE, Harwell, Didcot, Berks.

Wanted

Anyone having copies of the following books which they would like to sell should contact the Librarian at the Water Research Association, 18 Linkfield Lane, Redhill, Surrey, where they are needed urgently by research workers. *Electrophoresis of Proteins and the Chemistry of Cell Surfaces,* by H. A. Abramson, L. S. Moyer and M. H. Gorin. London, Chapman & Hall, 1942. *Electrokinetic Phenomena and their Application to Biology and Medicine,* by H. A. Abramson. Chemical Catalog Co., 1934.

The Society of Dyers and Colourists

Appointment of Editor and Technical Officer

Applications are invited for the post of Editor and Technical Officer to the Society. It is desirable that applicants have experience in editorial work and possess a sound knowledge of chemistry. Experience of dyestuff chemistry and application of dyes is an advantage although not essential. Familiarity with one or more foreign languages would be an asset.

The Society offers a salary of not less than £1,200 per annum commensurate with qualifications, age and experience. Membership of a joint superannuation scheme is available.

Application should be made to the Honorary Secretary, The Society of Dyers and Colourists, Dean House, 19 Piccadilly, Bradford, Yorkshire, for a list of duties, information regarding the Society, a copy of the journal and an application form.

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CALCUTTA UNIVERSITY CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 February 1960 Number 2

ASLIB CALENDAR

FEBRUARY

WEDNESDAY 24th. Economics Group joint meeting with South East Group, Reference Special and Information Section, Library Association.

MONDAY 29th. Senior introductory course to information work.

MARCH

TUESDAY 1st. Winter meeting. See paragraph below.

Aslib exhibition of methods for protection and storage of periodicals opens.

WEDNESDAY 2nd. Film Production Librarians Group meeting. See paragraph below.

WEDNESDAY 16th. Economics Group Annual General Meeting.

THURSDAY 17th. Engineering Group meeting. 'Nuclear power station design and operation', by G. T. Shepherd.

TUESDAY 22nd. Course on information searching. See paragraph below.

WEDNESDAY 23rd. Midlands Branch Annual General Meeting.

THURSDAY 31st. Winter meeting. The work of the Moscow Institute of Scientific Information, by Prof. S. M. Lisichkin.

APRIL

TUESDAY 5th. Winter meeting. See paragraph below.

FRIDAY 8th – SUNDAY 10th. Aeronautical Group conference at Cranfield. See paragraph below.

MAY

FRIDAY 6th – SUNDAY 8th. Electronics Group conference.

WEDNESDAY 18th. Economics Group visit to Unilever Ltd, Toilet Preparations Development Unit.

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

Winter Meetings

Three prominent Russian librarians visited this country in October 1959 under an exchange arrangement which is part of a programme resulting from British-Soviet negotiations on cultural, educational, scientific, and technical exchanges. Last month the reciprocal visit to the USSR of three British librarians, nominated respectively by Aslib, the Library Association, and SCONUL, took place. Aslib's nominee was Mr Anthony Thompson, MA, FLA, Royal Society of Arts Diploma in advanced Russian. Mr Thompson will report on his visit at a winter meeting to be held on Tuesday 1st March at 5.30 for 6 p.m. in the Council Chamber, Federation of British Industries, 21 Tothill Street, London, S.W.1.

On Tuesday 5th April, Mr B. C. Vickery will give an account of the International Conference for Standards on a Common Language for Machine Searching and Translation, held in Ohio in September 1959,* and outline the programme of the committee, of which he is chairman, set up to continue the work of the conference.

Course on Information Searching

An intensive one-day course on the organization of information searching will be held on Tuesday 22nd March at Aslib. The syllabus will cover searching in relation to varying requirements, sources, information retrieval, and presentation of results. The lecturers will be Mr J. E. L. Farradane, Scientific Information Officer, Tate & Lyle Laboratories; Mrs E. Mack, B SC, FLA, Information Officer, Metal Industries Ltd, formerly Information Officer, Aslib; Mr R. Sewell, Information Officer, The United Steel Companies Limited; and Mr Cyril Cleverdon, Librarian, College of Aeronautics, and director of Aslib Cranfield Research Project. Application to attend this course should be made as soon as possible, on the form enclosed with this issue, to the Meetings Organizer, Aslib.

Midlands Branch

On 21st October the Branch met at Garrett's Green Technical College, Birmingham, to hear Mr J. Roland Smith, Chief of Library and Information Services, Industrial Group, UKAEA, give a lively account of his impressions of the International Conference on Scientific Information held in Washington in November 1958.† On 24th November, at the Technical College, Coventry, members heard Mr C. W. Hanson, Head of Research Department, Aslib, outline the plans for the work of his department. Members met again on 19th January at the College of Advanced Technology, Birmingham, to hear Mr A. Hughes give an account of the work of the City of Birmingham Information Department.

Aeronautical Group

Twenty-eight students attended the short course on documentation for guided missiles and aircraft engineering organized by the Group and held from 6th to 8th January at the College of Aeronautics, Cranfield.

Papers to be given at the Annual Conference in April (see Calendar) include:

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* *Aslib Proceedings,* vol. 11, no. 11, November 1959, pp. 274–5.

† *Aslib Proceedings,* vol. 11, no. 2, February 1959, pp. 37–47.

'Organization of information services within a group of companies', by Mrs Mack, Librarian, Metal Industries Ltd, and former Information Officer, Aslib; an interim report on the Cranfield Research Project,* by Mr C. W. Cleverdon, Librarian, College of Aeronautics, Cranfield; 'Some information problems of space technology', by Mr J. E. Allen, Head of Aerodynamics, Projects, and Assessment, Weapons Research Division, A. V. Roe & Co. Ltd.

Film Production Librarians Group

At a meeting at Shell-Mex House on 25th November members heard an interesting talk on 'The search for cinema' by Mr Liam O'Leary, Film Acquisitions Officer, National Film Archive. Mr O'Leary described, as an example of his subject, the experience of Rex Ingram, pioneer film producer and director of the silent and early sound film days, illustrating his talk with film excerpts.

Meetings have been arranged for Wednesdays 23rd March, 27th April, and 25th May at 6.45 p.m. in the Shell Film Unit theatre, first floor, Shell-Mex House, Strand, London, W.C.2. The speaker at the March meeting will be Mr J. Trevelyan, British Board of Film Censors, on film censorship; and in April Mr Stuart Legg, Film Centre Ltd, will give an illustrated talk on film compilation. The meeting on 25th May will be the Group's Annual General Meeting.

Copies of the *Directory of Film Production Libraries* are still available, price 5*s.* plus 6*d.* postage, from the Group Treasurer, H. Wynder, 33 Sylvester Gardens, Hainault, Essex. A stamped addressed envelope should be enclosed with the order if an invoice or separate receipt is required.

Textile Group

A panel has been formed to examine and discuss the textiles section of the UDC classification. Miss H. Thornton, TMM Research Ltd, Helmshore, Rossendale, Lancs., is acting as Secretary of the panel and a meeting will be held shortly.

The New Library Classification of the USSR

The following message was received from Mr Anthony Thompson, in Moscow, last month. We hope to publish further details later.

Over a period of some years a new scheme of Soviet library classification has been worked out by three of the largest Soviet libraries; the Lenin Library in Moscow, the Saltykov-Shchedrin Public Library in Leningrad, and the Library of the USSR Academy of Sciences for their classified catalogues. The aim was to create a unified scheme which could be applied in all the libraries of the Soviet Union, first of all in the learned and special libraries and the bibliographical publications of the central Book Chamber. For this purpose the Ministry of Culture of the RSFSR set up a commission consisting of representatives of the three libraries mentioned above and of the Fundamental Library of Social Sciences, and of the Book Chamber. This commission has now accepted and approved the main divisions of this classification, which is based on the Marxist-Leninist classification of the sciences. The following principles were laid down:

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* *Aslib Proceedings,* vol. 11, nos. 8 and 9, August and September 1959, p. 194.

1. Marxism-Leninism, as the science of the general laws of nature, society, and human thought, takes first place.
2. All the other divisions are arranged according to the historical development of the action of nature on society, and divided into two cycles: the sciences of nature and the sciences of society.
3. The natural sciences are arranged according to the Marxist-Leninist classification of the natural sciences. The applied sciences, technology, agriculture, and medicine, which are concerned with how man harnesses nature, stand between the natural and the social sciences.
4. The sciences of society are arranged according to the Marxist-Leninist teaching on foundation and superstructure.
5. The general section for literature of complex content comes at the end of the classification scheme.

The agreed and approved main divisions are as follows:

The science of the general laws of nature and society	А	Marxism-Leninism.
The sciences of society	Б	Natural sciences in general.
	В	Physico-mathematical sciences.
	Г	Chemical sciences.
	Д	Geological and geographical sciences.
	Е	Biological sciences.
The sciences of the action of man on nature	Ж/Н	Technological sciences.
	П	Agriculture and agricultural sciences.
	Р	Medical sciences.
The sciences of society	С	Social sciences in general.
	Т	Historical sciences. History.
	У	Economical sciences. Economics.
	Ф	Communist and workers' parties. Organization of labour.
	Х	Government and law.
	Ц	Military science.
	Ч	Learning. Education. Pedagogy.
	Ш	Philological sciences. Literature.
	Щ	Art.
	Э	Religion and atheism.
	Ю	Philosophical sciences; psychology.
	Я	Literature of universal content.

This outline was approved on 11th June 1959 by the Library Commission attached to the Praesidium of the Academy of Sciences of the USSR. (It should, of course, be remembered that the Academy of Sciences embraces also the social sciences in the same way as does this new classification.)

Reference: *Sovietskaya Bibliografia* 3 (55), 1959, pp. 102–4.

ASLIB INFORMATION

Lending Library Unit, DSIR

The Department of Scientific and Industrial Research Lending Library Unit (LLU) will welcome groups of visiting students, librarians, and information officers at their London establishment, 20 Chester Terrace, Regents Park, during the current year. Dr D. J. Urquhart of LLU points out that visits of groups, though none the less welcome, will probably not be so easily arranged after the section has moved to Yorkshire to form the National Lending Library for Science and Technology.

Computer Abstracts

Computer bibliography ceased publication under that title in December 1959. Commencing in January 1960, the material formerly published in *Computer bibliography* appears in a new monthly journal, printed by letterpress, entitled *Computer abstracts*. It contains classified abstracts of current periodical literature, research reports, new books, and patents. It is accompanied by an insert with the self-explanatory title of 'Computer news'. *Computer abstracts* (including 'Computer news') is available from Technical Information Company, Chancery House, Chancery Lane, London, W.C.2, at an annual subscription of £25 4*s*. 'Computer news' may be ordered separately at £6 per annum.

Distribution of Engineers and Scientists

Engineering has recently published the third of its series of folders showing the distribution in industry of qualified engineers and scientists. Industries are divided into twenty-five groups, as before, and engineers and scientists are listed respectively under seven and six specialist headings. The new folder is obtainable, free of charge, from *Engineering*, 36 Bedford Street, London, W.C.2.

Index Chemicus

Eugene Garfield Associates announce that new chemical compounds are to be indexed within thirty days of original publication in scientific literature, in a monthly publication entitled *Index chemicus*, the first issue of which is dated January 1960. The index will contain chemical names, structural diagrams, molecular formulæ, and complete bibliographical information. *Index chemicus* is published by Eugene Garfield Associates, 1122 Spring Garden Street, Philadelphia 23, Pa, USA, to whom application for further information, including price, should be made.

Mechanical Book-marking

The Council on Library Resources has announced a grant of $20,000 to the American Library Association for research work leading to the development of a mechanical book-marking device to replace the present hand methods. Batelle Memorial Institute will carry out the research and development work in two phases. The first phase, for which the grant is made, is intended to demonstrate the feasibility of a machine which will automatically number the millions of new volumes annually added to library collections. It is expected that this phase will take about six months to complete and that the proposed book-marking device will be similar in size and ease of operation to a small adding machine, and be capable of uniform, legible marking on the spine of each book at twice the speed of hand methods.

The second phase, depending on the success of the first, will be the construction and testing of a prototype machine and is expected to take about four months.

Library Opportunities

The University of Florida is offering three graduate assistantships in the University Libraries for the academic year 1960–1 for study leading to a master's or doctoral degree in a subject field other than library science. Graduate assistants work approximately fifteen hours per week, assisting in bibliographical research or library administration. The stipend is $1,700 for a nine-month period. Applications should reach the Director of Libraries, University of Florida, Gainesville, Florida, not later than 31st March 1960.

NEW MEMBERS

Corporate

National College of Food Technology	Weybridge	E. R. Stone
Nigeria. Central Medical Library	Nigeria	Medical Librarian
Nigeria. Federal Institute of Industrial Research	Nigeria	Mrs A. Stone
Redland Tiles Ltd	Westerham	F. W. Bernhardt
Sanderson & Co.	London	L. A. Sanderson
Scope Ltd	London	Mrs E. E. Stowell
Searle, G. D., & Co. Ltd	High Wycombe	Dr G. R. Venning
Sociedad Mixta Siderurgia Argentina	Buenos Aires	A. H. Lagrand
Strachey, C.	London	
Tamworth College of Further Education	Tamworth	G. Crook
Trinidad, Federal Information Service	West Indies	Miss I. E. Pilgrim
Tyne Tees Television Ltd	London	C. Greenhalgh
Unicam Instruments Ltd	Cambridge	D. E. Sheppard
Union Carbide Ltd	London	B. L. McGhee
United Kingdom Atomic Energy Authority	Annan	J. Lea
Vectron Electro-Physics Ltd	Bedfont	L. G. Sebestyen
West African Cocoa Research Institute	Ghana	Miss D. J. Ellis
Yugoslavia, Centar za Dokumentaciju	Belgrade	D. Vuksa

Individual

Adams, Miss C. E.	Huddersfield
Andrews, Dr E.	London
Arnot, W. D.	Melton Mowbray
Easton, N. G.	Bridport
Gibbs, Dr J. E.	Teddington
Hines, T. C.	U.S.A.
Smith, Miss J. S.	Ruislip

INFORMATION IN THE BUILDING INDUSTRY

One-day Conference, London, 9th December 1959

CHAIRMAN'S INTRODUCTORY REMARKS

THE Chairman of the morning session was Mr Norman Longley, CBE. Before introducing the speakers he pointed out that the conference was assembled to discuss problems of documentation in the building industry from two points of view, that of the purveyors and that of the users of information. In the morning Mr Agard Evans would speak of the existing information services and Mr Keith Martin of the needs of the users. After that the proceedings would become elastic and it was hoped that delegates would come forward to speak their own views and ask what questions they wished. Mr Longley pointed out that speakers and delegates would express their personal feeling on the matters in hand. The most important function of the morning meeting was to throw out questions which might be followed up at the afternoon session by the discussion panel of purveyors and users.

EXISTING SERVICES: A REVIEW OF THE PRESENT POSITION

B. AGARD EVANS, MSC, ARIC

Chief Librarian, Ministry of Works

INTRODUCTION

It is my task to present a picture of information services in the field of building as they exist today; to provide a background into which may be fitted the various ideas and views which will be expressed later in the day. It is not easy, in a few minutes, to give a conspectus of a large activity which has developed piecemeal. I shall treat it as a chain, but it is in fact a conglomeration of interlocking and interdependent pieces. There must inevitably be omissions and in places the brushwork is faulty; for these blemishes I crave your indulgence.

THE QUANTITY OF INFORMATION

In the first place, what is the size of the building information field? I believe it is of the order of 10,000–20,000 'pieces' of information per year, where 'piece' is a published record in the form of book, pamphlet, article, catalogue, etc., taken from a world output of some 2–3,000,000* pieces of scientific and technical information. That is to say that our field contains some two to four hundred items a week which have to be organized into channels for the user.

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* All the figures in this report are only rough, but they reflect the order of magnitude.

ORIGINS OF NEW INFORMATION

The principal sources of new information are:

1. Research carried out by Government research stations, the laboratories of development associations, universities, technical colleges, manufacturing firms, and others;
2. Experimental building, the solution of problems currently arising in practice, the design of new buildings;
3. Inventions of new materials or products, or the development of new machines;

In addition, there is information presented in a new form:

4. Surveys of specific subjects; site organization; project planning;
5. Standards, codes of practice;
6. Legislation, building regulations, safety regulations, etc.;

and news:

7. Wages, prices, contracts sought, tendering practice, to say nothing of personalities, institution activities, economical and financial developments, and so on.

REPORTING

The first step with new knowledge is to record it. I believe that well over 99 per cent of all useful knowledge is recorded in some form or another. The media for reporting are:

Periodicals, of which in the UK we publish over 300 a year which are relevant to building. Corresponding figures for other countries are, roughly: USA 450, Germany 250, France 120. I have not the figure for USSR, but I understand that it is below twenty-five. Periodicals carry nearly all the news items and are a first source for a large proportion of new information. Apart from institutional journals, the technical article in a periodical is usually too short for a detailed description of the research, design of a building, or legislation. Nevertheless, they play a vital role in the information service and we are blessed with a very high standard of coverage and presentation in this country. It is questionable whether the numbers of periodicals could not with advantage be reduced.

Pamphlets, in which I include a wide range of official and research material. National Building Studies, Standard Specifications, research reports, reports of committees, surveys of special subjects, and the like. This form of publication generally constitutes the most authoritative source of information on any subject. Usually it is relatively unrestricted in length enabling its subject to be fully covered, and usually it is carefully edited and checked before publication. Unfortunately, it is frequently elusive to obtain and difficult to keep for reference. The number published annually in this country depends upon definition, but it is of the order of five thousand.

Books. With certain exceptions, technical books are not a medium for new information. At their best they are the place where the information reported in pamphlets and periodicals is brought together, after careful and critical review, and is presented with exposition and commentary. But there are many other kinds of book which I need not go into here. About 250 new books in the building field are published annually in this country, emanating from some forty publishers. There is remarkably little overlapping of subjects, except in the range of students' textbooks, and there are also remarkably few gaps in subject coverage. Publishers must be very wide-awake people.

Trade catalogues. Year by year trade literature is improving in presentation and in its content of responsible information. A good deal of the credit for this improvement must be given to the pioneer work of Mr Frank Yerbury and the Building Centre. More and more it is recognized as a very important addition to the information files of practitioners. Moreover, in this class of literature attention is being paid to standard size and other aids to filing, including the recent adoption of the Swedish SfB system as a standard. At a very rough estimate some five thousand products are catalogued, the literature on which is frequently revised.

Publication media such as *films* and *microfilms* rarely contain new information and are relatively few in number; but they play an important part in the spread of information.

ANALYSIS AND STORAGE OF INFORMATION

In the UK we have three principal libraries, where a general range of literature from all over the world is collected, each having a different clientele to serve. The libraries are those of the Royal Institute of British Architects, the Building Research Station, and the Ministry of Works. Each library analyses the literature by subject in its card indexes. Each publishes a record of the more important items in *R.I.B.A. Library Bulletin*, *Building Science Abstracts*, and *Ministry of Works Library Bulletin*; these three publications give excellent coverage. The development of the Building sections of the Universal Decimal Classification has facilitated the analysis in RIBA and the Ministry of Works and has made it easier to exchange and benefit from the work of other documentation centres, working either in English or other languages.

In addition to the three principal libraries there are several centres having a more specialized field, e.g. Cement and Concrete Association, Timber Development, Paint Research.

Much information is compiled into reference books, books of specifications, data books, books of tables, etc., which are kept under frequent revision.

Equally, information is stored in the form of detail sheets.

Finally, places of storage are provided by a number of libraries in the larger contractors' offices and the record files in practitioners' offices.

Beyond all this lies the network of information provided by libraries and information centres including national libraries, libraries of the Research Associations of DSIR, Engineering Institutions, and the wide range of Aslib membership covering every aspect of science and technology.

DISSEMINATION OF INFORMATION

This is the third leg in the cycle of documentation: i.e. reporting, organization, dissemination; but it falls into two parts, namely, the general spreading of information to keep people currently informed and the particular job of producing specific information as required.

The first or general job is performed by the sale and circulation of periodicals, pamphlets, books, etc.; the organization of exhibitions, conferences, lectures, film-showing, and broadcasting; the issuing of circulars, advisory leaflets, etc. and last, but by no means least, conversations and correspondence and the observation of things on building sites.

The second or specific job consists of answering inquiries. Most special libraries regard this as one of their most important functions. Many questions, however, cannot be satisfactorily handled by a library, and a professionally qualified information officer is needed to understand the needs of the inquirer and to gather together and formulate the information to meet the specific case. A number of bodies have special sections devoted to inquiry work; in the building field, the Building Research Station has had such a section for over thirty years; the London Master Builders Association have a service for members; the various trade and development associations have them and most manufacturers have a service for their customers. The line between where an information officer's services end and a consultant's begin is a little wavy, but generally understood and respected.

The liaison officer. Into this field there enters a figure who is often overlooked or under-rated, namely the Liaison Officer. Unless there is someone in a firm or organization who knows where to go for the information, who can get it and interpret it for the benefit of his organization and direct it to the person or point where it will be of value, the organization will suffer from delay or remain in ignorance of answers to important questions. It is seldom a full-time job, but it is one of vital importance. Often, of course, the boss or partner is the Liaison Officer without ascribing that title to himself. But, whoever it is, he is a vital link between his organization and the network of information centres and services, which exist to help.

INTERNATIONAL CO-OPERATION IN THE BUILDING INFORMATION FIELD

Considerable progress has been made since 1949 in developing international co-operation. The central body is the CIB, International Council for Building Research, Studies, and Documentation. Most countries have a national building documentation centre or committee, which makes a focus for inquiry; fifteen or more countries have an abstract service producing an analysis of the national literature in a major language. This country has played a prominent part in its development, and Dr Lea, Director of Building Research, is President of CIB for the second time. I cannot go into detail here, but much has been done and much remains to do in a combined effort that is certainly worth while.

CONCLUSION

Such, then, is a sketchy outline of the rather loosely co-ordinated pieces that go to make the information story. Parts of it are very good, but it could be made to work more efficiently as an integrated whole. What is it that you want the machine to do? Wherein lie its weaknesses? What remedies are needed? How are they to be applied?

BUILDING INDUSTRY

WHAT THE BUILDING TEAM WANTS

W. KEITH MARTIN

Martin & Saunders Limited

Past President of the Southern Counties Federation of Building Trades Employers

What the Building Team wants is, I think, the more appropriate heading for my subject this morning. Under this heading I include the architect, the engineer, the surveyor, the building and civil engineering contractors and all the subdivisions under those headings which constitute the Building Team, including those members who serve with national and local authorities.

There are nearly 98,000 building and contracting firms in Britain; the annual wage roll is £900,000,000 and the annual investment programme, for which the Building Team is responsible, is well over £2,000,000,000.

The Building Team is also the keystone of our national economy. Railways, water, gas, electricity, and nuclear power could not begin to function until the Building Team has done its constructional job of work. Civilization depends upon the Building Team for its roads and communications, its houses, factories, and offices. In fact, there would be no civilization as we know it without the productive efforts of the Building Team. That is the background against which we must consider our subject and its importance, i.e. 'What does the Building Team want in the way of technical information to do and to improve its work in the public interest?'

The first thing we need is reliable information disseminated to all members of the team at the same time, so that individual sections do not have to embark upon a process of education, in order to secure approval of new methods of construction, or the use of new materials.

I have a particular reason for introducing this point. When advisory consultative committees of architects, quantity surveyors and builders were set up, it was found that the decisions of these committees were only reaching the builders, due to their better organization for disseminating information. Joint decisions and recommendations are useless unless they reach all the persons in whose interest those decisions are made. Neither are they of any use if the recipients are not prepared to read them and/or operate them.

Point no. 1 is then: We want reliable technical information centrally disseminated to the Building Team and to those who influence its work.

Broadly speaking, technical information comes to us from two sources:

1. Authoritative information from official sources, e.g.
    - British Standards Institution,
    - Building Research Digests,
    - Ministry of Works in Post-war Studies, and the like.
2. Trade manufacturers in respect of:
    - Materials,
    - Plant,
    - Services.

Much of the official information needs to be summarized before dissemination so that 'he who runs may read'.

It is also very necessary to use simple language in compiling technical information, so that all types of builders may readily understand it. Illustration is the quickest means of education. Remember our own education commenced with the picture book.

Trade literature needs examination and the goods need testing to avoid costly experiments, which can be so damaging to everybody and very uncomfortable to the occupier in the case of a habitable building or factory. I know that it may cost as much as £10,000 to test a single article, but that is still the cheapest way of finding out whether or not a new material will do its job. There would be no safe air travel if there were no proper testing of materials before they were used in aircraft production.

The type of information required is:

1. Cost data.
2. Research data.
3. New materials and methods of use where non-traditional.
4. Failures.
5. Good practice.
6. Management, training and organization.
7. New constructional techniques.
8. General information service.

This information is required not only from this country but from all over the world.

So Point no. 2 is then: World-wide technical information centrally collated, vetted and disseminated.

Every member of the Building Team must find it irritating to receive the wide range of manufacturers' advertising literature of assorted sizes, which it is impossible to file and index. Such literature comes to us often without technical information or sizes and frequently contains only coloured illustrations and unsupported claims of merit, which cut no ice with the technically minded members of the Building Team.

Neither does official and technical information come to us in any standard form, which can be properly indexed and filed for use as required.

Why not a national index system?

So Point no. 3 is: The distribution of technical information standardized and issued under a national index system for filing and reference purposes (a properly kept index system of information on this basis would have a resale monetary value).

I could, of course, go on enumerating points of this kind, but I sense already the question arising in your minds, 'How is it to be done?'

I think the Dutch have shown us the way in their Building Centre at Rotterdam, particularly as, when building centres were established in Washington, Hamburg, Darmstadt, Cologne, Lille, Brussels, Antwerp, Vienna, and San Sebastian, the countries in which those towns are situated came to the Building Centre at Rotterdam for advice and guidance.

Bouwcentrum, as the Dutch Building Centre is known, aims to be the signpost of technical information for the world. Here technical information is sorted, collated, and indexed for easy reference. All the materials exhibited at the centre have been tested and therefore can be relied upon by all who use them.

Experts are retained by the centre to give advice upon specialized subjects, and for such advice they are paid the full professional or market value of their services, so that assistance of the highest quality can be obtained. Research work is carried on in conjunction with the State on a 50/50 basis.

The centre itself, however, was sponsored and financed by some of Holland's leading contractors. The glass manufacturers also made a contribution of £10,000 when the centre was first built and they have reaped a rich reward by the excellence of their products, which are exhibited there.

The centre was opened ten years ago and in 1955 a large extension was added, but even this does not meet the present growing needs of the centre and of those who use it.

One finds there technical journals from all over the world, which are carefully read in search of up-to-date information.

The centre believes that planning is teamwork. For example, in the case of a hospital, the architect brings his plans along to the centre and the doctors, matrons, sisters, and nurses, who have to work the hospital, sit down together to look for 'snags' in the planning stage, instead of waiting to find them when the building is in use.

A similar method is adopted in the progressive additions to towns and villages to meet the needs of a growing population—a much better approach than the negative planning system we have in this country. An Australian architect, who came all the way from Australia to visit the centre, said that he had learnt more from a single visit than in twelve months of research on his own account.

Perhaps I can best explain the usefulness of this centre by giving you an extract from the daily diary of inquiries of the Bouwcentrum:

1. A garage proprietor, who intended to convert his premises into a factory for producing plastic building materials, inquired what kind of goods the building industry required.
2. An architect wanted the names of specialist firms for re-roofing a church in copper.
3. A tenant of a flat, whose peace and quiet were disturbed by the piano teacher in the next flat, wanted to know how his noise problem could be solved.
4. An artist, who had been commissioned to design a mosaic floor in the hall of large offices, wanted information on the type of mosaic flooring available commercially.
5. An architect wanted to be put in touch with a firm specializing in the control of air humidity in a castle undergoing restoration.
6. A doctor wishing to build himself a house wanted information on all its implications, including building finance.
7. An economist wanted to know what saving of fuel could be achieved by using double glazing.
8. A building contractor wanted information about sprung floors and infilling panels for curtain walling.
9. A civil engineer wanted information on the use of rubbish chutes in multi-storey blocks of flats.
10. An industrialist desired information on the most suitable floor for a chocolate factory.

So we see the Dutch Building Centre acting as a general information centre.

There may be others, but I am satisfied that the Bouwcentrum is the kind of centralized source of technical information which would suit the requirements of this country. There is, of course, a difference between Holland and this country and to meet that difference it would be necessary to have regional building centres linked with the main centre organized and run on the Dutch pattern. In my view our own Building Centre is not broad enough in conception, as at present operated, to meet the plan I have outlined. It could, of course, be adapted, but not on its present financial basis.

Now we come to the very important question of Finance.

As I have said, the wage roll of the building industry, by which the Building Team lives, is £900,000,000 per annum. If we could collect, by various means, the equivalent of a farthing for every pound expended in wages, we should have an income of nearly £1,000,000.

As half the building and civil engineering work carried out annually is for the Government, nationalized industries and local authorities, we could look for half our revenue from this source, particularly as the ultimate beneficiary is the consumer, whose overall interest is the responsibility of the Government.

Of the 98,000 firms in the building industry, 81,600 employ fewer than eleven operatives, so the contribution from that source would be small. That leaves us with approximately 16,000 medium and large builders and contractors who I think would appreciate the value to them of the proposal on the lines I have indicated.

Then we have the manufacturers of materials and plant, who could find my proposal a very profitable one to support, as have the glass manufacturers in Holland.

The professions, I feel sure, would expect to play their part in any sound proposal which would bring benefit to them and their clients.

Contributions could be achieved by an annual subscription to a central body in proportion to the size of the firm and the value of the information made available. All those subscribing upon an agreed basis would be entitled to free information and service. Information to non-subscribers, in the preliminary stages, should be supplied on a fee basis, such fee to be fixed from time to time by the advisory or supervisory council controlling the general activities of the centre, as in Holland. The Government could ensure the success of the scheme by allowing all contributions to rank as a business expense and allowable as such for income tax purposes.

With that picture before you, I return to my three points of what the Building Team requires:

1. We want reliable technical information centrally and quickly disseminated.
2. We want world-wide information centrally collated, vetted, and disseminated.
3. We want technical information issued in a standard format under a national index system for filing and reference purposes.

That, Mr Chairman, is what we want, in my view, and I have indicated the way in which it can be provided. I trust, also, that this modest contribution will provide a useful basis for discussion.

INFORMATION IN THE BUILDING INDUSTRY: PANEL DISCUSSION BETWEEN USERS AND PURVEYORS

Chairman: THE EARL OF VERULAM, MA, COMPIEE

Panel Master: BARBARA KYLE

One-day Conference, London, 9th December 1959

THE CHAIRMAN said that he was present that afternoon like a god out of a machine, but not claiming divinity. He had spent the morning at an engineering firm and, because of economic matters, he regretted he had been unable to hear the words of wisdom and disagreement that had been expressed at the morning session. Somehow, he had to sum them up at a quarter past four, but he would be guided for the next hour and a half or so by the questions and answers flying to and fro like sparks amongst the stubble. To steer both the questions and the repartee there could be no better person than Miss Barbara Kyle, who was to be the Panel Master or Question Master. He proposed to hand over to her now, and she would carry on until he himself took over again at the end.

The PANEL MASTER said that information, as everyone knew, consisted of bits, and she had found that by combining three bits she could begin by saying 'Lord President of the Council of Aslib (and this she did with pleasure), Consumers and Purveyors'. The first question that might be asked was why she herself was there. This had to do with the machinations of Mr Agard Evans, an old enemy of hers. He had three desiderata for a Chairman for the meeting. First, the Chairman must know nothing about building and therefore have no views. On this score, he was wrong. Secondly, the Chairman must have no bias as between Purveyors and Consumers. He thought he was right, but he was wrong again. She was on the side of the Consumers. Thirdly, it would be rather hectic to get in all the questions and the Chairman would be a bit unpopular. He had tried to put it more tactfully but that was what he really wanted—an unpleasant Chairman. Clearly, he could not ask Lord Verulam to be unpleasant. On this score he was right, and she was prepared to be unpleasant.

She had before her a number of questions and it was hoped that they gave a fair conspectus of the questions asked during the morning session. Not more than ten minutes would be given to any one question. Priority would be given to the Panel, but any time over would be given to the floor. If a question died away, the next question would be taken.

First, however, she would like the members of the Panel to introduce themselves.

The members of the Panel, who then introduced themselves, were as follows:

Consumers

Ove Arup, CBE, MINGF, MICE, MISTRUCTE

Dargan Bullivant, DIPENG(HONS), AADIP(HONS), ARIBA
Richard Eve, BARCH(MCGILL), ARIBA
N. Stanley Farrow, MBE, FIOB

Purveyors

B. D. Dottridge, The Standard Catalogue Company Limited
Gontran Goulden, FRIBA, The Building Centre
R. H. Code Holland, Publishing Director, Sir Isaac Pitman & Sons Limited (replacing Mr W. Greville Griffiths, MA, B. T. Batsford Limited, Publishers)
Gordon H. Wright, ALA, County Technical Librarian, Hertfordshire

The PANEL MASTER said that in the first question an attempt had been made to draw some of the threads together and the focus of interest had been found in the question whether literature should be aimed at different levels of consumers. Perhaps this question ought first to be thrown to the Consumers: the Purveyors could then come back with their answers. As formally worded, it read:

In trade and other literature about new or interesting projects, ought presentation for different levels to be aimed at? How many levels does the Panel think exist? How would they define them? If there are a number of different levels, what implications might this have for presentation and dissemination? Would it include, for instance, actual information on the site to the operatives?

Mr BULLIVANT (Consumer) said he thought there was a myth behind the whole idea of presenting information at different levels. His predecessor, Michael Ventris, had carried out a very detailed survey at first hand into what was required. One of the most popular kinds of publication amongst architects was found to be that intended for operatives on the building site. This indicated one of the real difficulties in trying to decide in advance precisely what kind of information and what kind of presentation was suitable and appropriate for different kinds of people.

Information should certainly be differentiated and differently presented, but it did not necessarily follow that it should then flow into entirely separate and different channels—an implication sometimes drawn from the first postulate.

The architect laboured under very great difficulties. He was sometimes presented with a certain form of information, often by manufacturers, which he though was what he wanted. When he got on the building site he found an operative trying to fix what was specified who had a far better technical presentation of the information which he, the architect, wanted. He had it then, of course, for his next drawings and projects.

Differentiation must not be carried too far, because it was extremely difficult to decide what should go to one level and what to another.

Mr FARROW (Consumer) said he would be inclined to agree with this.

Mr ARUP (Consumer) said that, while he too agreed, the answer would be different with different materials. There might be a new kind of cement—sulphur-resisting or of some special quality, for instance. A builder or engineer specifying its use would want to know exactly what this cement would do, what it cost, where it should be used and where it should not be used, the results of tests, whether it was slow-setting and what strength it produced, whether it had acid-resisting qualities, and so on. This information should be stated factually without a lot of advertising. Then, of course, there was, for cement or any other material, interesting information about chemical properties and content, how it was made and so on, which the ordinary consumer would probably not bother about. Nevertheless, this also was interesting information for somebody, for instance the manufacturer, and two different sets of information might be required.

The PANEL MASTER said it would seem that the Consumers agreed that there should be some differentiation of levels, although they were not one hundred per cent behind the idea and were unable at the moment to define precisely what all the levels might be. Perhaps the Purveyors would now give their views.

Mr GOULDEN (Purveyor) said that the question had so many facets that it was difficult to single out any one of them.

Miss Kyle had mentioned at the morning session her experiences in getting information on solid fuel appliances. The sheet handed out ordinarily to the person looking for a solid fuel appliance was a rough indication but apparently it sometimes contained some unreliable dimensions, and it was useless to the man who had to fix the appliance. The problem was to get the right piece of information into the right person's hands. A person like Miss Kyle—who seemed to be a 'do-it-yourselfer' at a very advanced stage and was going to fix her own fuel-burning appliance—usually wanted the fixing details at the first stage.

For those people who produced promotional literature, the first stage was to draw attention to the existence of a material. Such literature might catch the eye as being of interest. It was cheap to produce and therefore obviously did not contain much technical information. Those who were interested might be drawn to more advanced information for which they had to write to some organization or to the manufacturer. This was a question of dissemination.

He would have thought the idea could be seen *par excellence* in the publication of the *Building Research Station digest,* or in the *National building studies,* which were reports on some process or piece of research. The *Digest* was based on the *NBS* in a form basically for architects in the first instance and was circulated and sold by H.M. Stationery Office. The Ministry of Works took from the *Digest* the part that was of interest to the chap on the job, the operative, and produced a *Ministry of Works advisory leaflet.* The first two were produced by the same organization and the third by another, and there would seem to be room here for specialized information services. The bit that was particularly applicable to the architect might be taken up perhaps by the architect's organization and the builders could then take the bit they wanted. This would be one way of getting information to the right person.

Mr Farrow had implied that clear language was important. This was the same right the way through, and it sometimes happened that the architect wanted a very simplified type of fixing information which he could read very quickly. It might provide him with a better answer than the *BRS digest.*

The situation described did, however, exist, and there was a need for different levels of information. But perhaps the manufacturer was not the person to produce all of them.

Mr DOTTRIDGE (Purveyor) endorsed these remarks. The architect, he said, clearly wanted slightly different information from the man on the site, and by this he meant slightly different in quality rather than in the information itself.

It had already been pointed out at the morning session that builders and architects had very little time to plough through a whole lot of reading matter, and therefore the information given to the architect in the first place should be specific and should contain what he really required—the technical details. If there were certain fixing necessities he should know about, they should be included in brief form, because they could affect his specification of the material. When it came down to the actual detail of the fixing, something more was required; and it was required by the person who was actually going to fix the material at the site. It was up to the manufacturer to provide proper instructions so that this information could be disseminated and passed through to the builder or the builder's workers on the site.

The PANEL MASTER said she had been asked to draw some practical hint for further action from the discussion. It would seem fair to say that there was agreement as to the need for a series of levels of information but no agreement as to what they were or how to aim at them. Future action should perhaps take the form of research into this problem.

The next question asked:

Is there need for a Consumer Research Council in the building industry? How would it function, bearing in mind that the consumer was not a layman but the building team? This problem had been put forward by more than one person. The term 'building industry' in this context included everything covered by the expression 'building team'.

Mr EVE (Consumer) said there should certainly be some form of test before one accepted the responsibility of making a recommendation. A central organization could, however, become dangerous and act as a form of censorship. A widespread affair working through a large number of associations would be preferable to a single organization. From the point of view of the architect who had to make recommendations and stand behind them, something of the kind was essential. At the moment, one asked what had been done by the Building Research Station and got some kind of report.

Mr DOTTRIDGE (Purveyor) said that he felt strongly that any work such as this should be done by the associations already in being, some of whom carried on considerable research work. There were already a number of standardized tests which could be applied, and if the associations could give some form of approval to goods they were the right people to do so.

Mr BULLIVANT (Consumer) said that something of the kind was necessary, but he personally felt it lay a long way ahead in the future. At the moment there was not even an authoritative editing service of data sheets giving technical information on building projects; a consumer advisory council to give factual information based on tests was a much more sophisticated and advanced idea. He did not know of any organization in Europe which did this kind of job. The Swedes were the furthest forward, and for ten years they had had an absolutely first-class service of edited and authoritative data sheets giving technical information on building products. Only after ten years were they able to face the next step forward, which was how to devise the range of tests required, before advancing to the stage of setting out the test data simply and well. Some of the tests had already been devised and were in existence, of course.

They would probably reach that stage, but he doubted whether they would do so for another five years. Research had only just begun.

Mr Bevan at the morning session had mentioned the move by the International Council of Building to have a sequence of factual data arranged in systematic form related to definite tests which were available for building projects. This was the way forward, but it was a long way off. In the intermediate stage we could go a long way to meet the need which a consumer advisory council would serve, if the results of tests already carried out could be put down on data sheets such as the Swedes had.

The next question was:

Have the Panel any views on how to awaken an interest in the unconverted?

This was the person who had been called that morning, somewhat unfairly, the 'recalcitrant reader'. Had the Purveyors any ideas on how to convert the non-reader and make things easy for him?

Mr GOULDEN (Purveyor) said he would like to try to convert the chap who produced the information. It was no use converting the chap who did not read if the information he was offered was not worth reading. The only way to convert the manufacturer and get him to produce decent trade literature was for people to refuse to accept bad trade literature. This was done in America, where they were a little more ruthless, by the American Institute of Architects. They issued stamps, and the members were asked to stick them on literature which was no good and return it, saying it was the wrong size.

The Royal Institute of British Architects printed small postcards at one time but then they got cold feet and decided this was outside their terms of reference, so the postcards were withdrawn. First, the trade literature must be got right and then people must be got to read it. He would not hazard a guess as to when that would be.

The PANEL MASTER pointed out that the questioner had stressed that to some extent the unconverted might not know that he wanted information.

Mr WRIGHT (Purveyor), taking the question from a different aspect, said there were two sides to it—the short-term and the long-term policy.

On short-term policy, one had to find a method of producing and dispensing information that aroused interest. He would have thought that, for instance, research associations could do a great deal with travelling exhibitions. Also educational establishments could encourage exhibitions within their own colleges.

On long-term policy, one had to rely on education; reading and the use of libraries was not a subject on the curriculum after the age of eleven. The use of books in education was not undertaken seriously enough after junior school and certainly not enough in further education centres. This must be viewed with some concern.

Mr CODE HOLLAND (Purveyor) said that if anyone could explain how to persuade people to take an interest in books it was the Panel Master. Could she, speaking in another capacity, provide the answer?

The PANEL MASTER said she did not think this was the moment for her to do so; but it was only fair to say one knew the extent of the problem, rather than the answer. She very much agreed with Mr Wright that the art of reading required to be taught after the age of eleven. The type of reading under discussion could not be taught up to the age of eleven: it was long-term educational policy. Perhaps the Consumers would give their views.

Mr FARROW (Consumer), speaking from the point of view of the builders and the civil engineering contractors, said that this question must be tackled in the same way as problems of accident prevention, education, and apprenticeship. In other words, members had been encouraged to take an interest in these subjects through the appointment of an educational officer at the headquarters of the trade association, through technical committees on technical matters, through accident prevention officers, and the like. Firms were encouraged to set up a counterpart in their own organization and to make someone responsible for apprenticeship, accident prevention, education, and so on. The point had now been reached when there would be someone in each organization responsible for 'information'. He must know exactly where he could obtain information, and only by awakening interest in organizations would it be possible to get the rank and file to start reading and perhaps appreciating the information that was put over.

Mr EVE (Consumer) said that, while he was all for looking to the future, it was very important for the future of the building industry that chaps who could not read should not be there or remain there.

Mr CODE HOLLAND (Purveyor) asked whether members of the Panel were not unduly pessimistic. People were reading more and more of the literature referred to. It started during the war when the men in the forces read a great deal of elementary explanatory material.

Mr FARROW (Consumer) remarked that in some quarters people were doing too much reading and not enough solid work.

Mrs JENKINS (Regional Technical Librarian, Ministry of Works, Bristol) said she was reminded of the telephone system. One could dial TIM and find out the time. Perhaps what architects and contractors wanted was to be able to dial or write and to receive the information by return.

Mr BAKEWELL (British Plaster Board (Holdings) Ltd) referred to Mr Goulden's point that the better type of literature presented the architect with the facts he wanted. He would find time to read this. Architects could play a great part in encouraging the production of such literature, but most building firms were very small or comparatively small, and they were often controlled by one man. Literature was a very small part of his business.

It would be helpful if in the near future the RIBA could provide a standard form for manufacturers, both size and format, as a guide. He had visited a great many manufacturers and it seemed to him that in many cases the standard of literature was low through ignorance. They had not taken time to go into the matter.

Mr NISBET (FRICS, Chief Quantity Surveyor, War Office) suggested that in the matter of converting the unconverted one must not be too highbrow and forget other means of communication than the written word.

The problem as he saw it at the moment was that a vast fund of information was stored away in libraries but it was treated in a defensive manner. Information was built up, but nothing was done about it until a question was asked. The people who had the information should take the initiative and present it to the people who needed it. Then the question arose how this was to be done.

He would suggest other means of communication than the written word, such as television. *The Archers* had done a lot for agriculture. Could not the building industry have something of the same kind, with a small building firm and a county such as Surrey, directed to the small and medium-size builder? Could not propaganda be used in that way to put the information across? People would not have to read: they could look. This was a quick visual method of learning.

Mr GOULDEN (Purveyor) pointed out that for the past three years the RIBA and the Building Centre had been running a competition for trade literature with quite good results. In the conditions, there were two or three pages of words of wisdom from a joint committee, consisting mainly of architects, on what constituted good trade literature. British Standard 1311 contained advice on arranging trade literature, although it was not full enough.

Any manufacturer could at any time ask the Building Centre for advice.

The conditions of the competition had been sent to five thousand people.

There was a sound radio programme now and he happened to be a member of the panel which advised the BBC. It did not generally take the advice, but that was neither here nor there! Pressure had been exerted from the first for television, since building was a television subject. Unfortunately, there was no room, but if there were another television channel something might be done.

The sound programme was directed largely at the small builder, though he had not been able to find out whether any of them listened. It went out on *Network Three* at 7 o'clock on Tuesdays, and it had been going on for nearly three months.

Mr DOTTRIDGE (Purveyor) said he was not sure whether many small builders listened to *Network Three.*

The PANEL MASTER remarked that this tied up rather well with the next question. Reference had been made to visual aids for those who could not read and to clear writing for those who could. Practically all the suggestions made at every conference that had to do with the purveying of information came round to these two points: *a.* you must be clear and *b.* you must be accurate. The question read:

What responsibility should an information centre take for the accuracy of the trade literature which it disseminates?

This could be put another way round. Who ought to be responsible for the accuracy of trade literature? It had been suggested at the morning session that trade associations should be responsible, but this tied up with the layman and the small consumer. He lost confidence if a percentage of the information provided by information centres was inaccurate or non-standardized so that he could not compare one piece of information with another. Had the Panel any suggestions as to who should be responsible for seeing that trade literature was accurate and standardized?

Mr GOULDEN (Purveyor) said it must rest with the manufacturer. Even if the centre edited and produced the information, the basic information must come in the first place from the manufacturer.

Responsibility for standardization was a vexed question. There were two possible courses. One tried to persuade the manufacturer to produce standard literature to one's requirements, or one edited the information and that cost a lot of money.

So he would say that the manufacturer was responsible for the content. On the other hand, the centre could more easily control the size if it accepted responsibility for producing the literature. Otherwise, one relied on the printers, who more often than not failed to trim to the right size.

Mr FARROW (Consumer) said he was not entirely happy about the manufacturers being responsible for accuracy. He would have thought it possible, in certain circumstances, for the Building Centre, for instance, to see that certain standards were maintained. They could not wash their hands of it entirely. They could not pass anything, irrespective of whether it was accurate or inaccurate. They must take some measure of responsibility.

Mr GOULDEN (Purveyor) said he had perhaps misunderstood the situation. It was a question of what was meant by accuracy. Suppose a man said, 'Look here, our block has a crushing strength of two thousand or five thousand or one thousand'. How could the Building Centre be blamed if he was wrong? This was the accuracy he had in mind, not the accuracy of claims of performance, or general behaviour, but mistakes in drafting. One could not go to every manufacturer and carry out an investigation on the spot as to whether what he said about laminated board, for instance, was true. The task would be colossal!

The PANEL MASTER asked whether from experience over a period of years the Building Centre could ensure reliable answers to some of the questions people asked about laminated boards or solid fuel appliances. Did they say, for instance, 'We won't accept any literature that does not answer all these questions'?

Mr GOULDEN (Purveyor) said they did try but manufacturers had a habit of leaving blank some of the things they did not want to answer, and they could not be forced to answer questions.

The PANEL MASTER remarked that their literature need not be distributed in that case.

Mr GOULDEN (Purveyor) agreed, but pointed out that people then asked for the literature and it was not available. This happened even with standard literature. It was refused because it was not the right size, and then people wanted it and they would go off in a huff because it could not be produced.

Mr DOTTRIDGE (Purveyor) agreed that this difficulty arose when one tried to produce a standard information sheet or card. But some people were doing it, and doing it quite well. One did run up against the manufacturer who received one's explanation of his product and then said, 'No, I can't allow that to go in. It's not true.' One then asked him to write his own description and he omitted the all-important points, because he could not claim that his product would live up to the specification everyone imagined it should. When it came to specifying K values and U values, etc., an enormous number of manufacturers could not supply the information, because they had not gone to the trouble of testing their materials. It was a long slow process but gradually manufacturers were becoming accustomed to including the information that was needed. It would, he thought, be another five years before it was completely worked out and full technical information was provided on every form of pamphlet or leaflet. With perseverance it would come in the end.

Although considerable effort was being devoted to standardizing page size, there would continue to be an enormous number of pamphlets, leaflets and booklets in non-A 4 size because the impact of advertising was very great and advertising agents still assured people that this was all right. Even in the Scandinavian countries there were leaflets that were not A 4 or A 5.*

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* See new British Standard 3176 : 1959. *Printed matter and stationery. A and B series of trimmed sizes.* London, BSI. 4*s.* and British Standard 1311 : 1946 [amended 1958] *Sizes and contents arrangement for manufacturers' trade and technical literature (building industry).* London, BSI. 1*s.*

Mr EVE (Consumer) asked whether he understood from Mr Goulden that the crushing strength of a block published in Building Centre literature had to be taken back to the manufacturer to be checked. Were no precautions taken? The information was useless if it could not be applied with a full guarantee: the building might come down on his ears or those of his client!

Mr GOULDEN (Purveyor) replied that the information must, of course, be checked. One must ring up the manufacturers and have a word with them. Did Mr Eve take every single word he saw without checking it himself? Of course the Building Centre did not check everything.

Mr EVE (Consumer): So we have to check?

Mr GOULDEN: Yes, you check everything.

Mr BULLIVANT (Consumer) said there seemed to be two kinds of responsibility, although the ultimate responsibility must surely rest with the manufacturer, because if there was a failure he would be liable in law. He had ultimately to redress the loss, perhaps outside the Courts.

There was, however, another responsibility that the information service might bear in mind. It was a hard one—the responsibility for taking reasonable precautions to check that the facts were correct, that the material had passed a certain standard test as to the fire properties, and so on. It should at least ask for the number of the fire certificate.

The Swedish Building Centre went so far as to have a legal contract with every manufacturer, which laid down precisely what information they should give. If it was not given the centre was in a strong position to reject the whole presentation of the information. An information service should be able to accept that kind of responsibility.

He realized that this was hard and could not be met in full measure at the moment, but it should be the aim. It was impossible for the practitioner himself to check every fact and to check each individual item amongst the large quantity of material. Otherwise, why should he bother to take any interest in an information service?

Mr ARUP (Consumer) said that Mr Bullivant had covered his point. One should be able to obtain information that was reasonably reliable and reasonably full, with no vital information left out. The information service should be responsible for providing it, if possible. Otherwise, it would be necessary to get a lot of trade pamphlets, which was often the case. These were sometimes of no great value because they did not contain reports on certain matters and one had to start an investigation for oneself. It would be easier for users if some sifting could be done for the benefit of everybody. What was wrong at the moment was that the individual had to do it for himself.

The PANEL MASTER asked whether there might not be some confusion between two kinds of literature—that produced by the manufacturer but available from the information centre and that produced by the information centre itself. Surely the important one was the second. The reputation of the information centre would suffer if this material was not accurate.

Mr DOTTRIDGE (Purveyor) said that no manufacturer had stood up to defend his own literature, but from the conversation between members of the Panel it sounded as if the manufacturers were completely irresponsible and put any 'crushing strength' in their pamphlets, hoping for the best and that the building would not fall down! He could give an assurance that before anything went into any manufacturer's catalogue every endeavour was made to ensure that the information was correct. And if they used the services available to them in the production of their literature, the information was doubly checked. He did not want anyone to go away with the idea that pamphlets and information from any source were completely unreliable.

The PANEL MASTER said it would seem that this was another subject for investigation as to who was responsible for the facts in various forms of literature.

Perhaps they might now indulge in a 'quickie'. *What proportion of expenditure should be devoted to research and to the dissemination of research results?* More than one speaker had suggested at the morning session that at this point of time—not always but now—it might be a good idea if the building industry spent rather more proportionately on disseminating information than on new research. How far did the Panel feel this would be a good idea?

Mr FARROW (Consumers) said he did not think nearly enough money was being devoted to research. Much larger sums ought to be expended. He did not think enough was being spent on dissemination, either. It would be a fatal mistake to cut down the money spent on pure or even applied research at the moment and put it into the dissemination of technical information.

Mr EVE (Consumer) asked whether money could not be taken from promotional advertising.

The PANEL MASTER said that obviously people did not want to take money away from research. Did they feel more could be put into dissemination than at present in the building industry?

(Cries of 'Yes'.)

The PANEL MASTER said the next question was:

Does industry make sufficient use of specialists in information services?

The suggestion was, she thought, that the building industry in general should avail itself more fully (and she was not in a position to know whether this was a sensible question) of the information services attached to allied industries. Were the specialist sections of the allied members used enough by the central building industry?

Mr GOULDEN (Purveyor) said this was bound up with the question whether there was a centralized organization as described as existing at the Bouwcentrum, or the system adopted in this country. The Dutch started from scratch after the war, with no building research station and very few trade associations or centralized organizations. They had a small country and a small number of manufacturers. They were able to plan a smart new building with a good layout, highly polished, and so on.

The PANEL MASTER pointed out that there was a question, which would be taken last, on whether there should be a centre of this kind. She asked Mr Goulden to deal with the use of specialized centres, if possible, without developing the theme of the central information centre.

Mr GOULDEN (Purveyor) said he would withhold his remarks for the moment.

Mr FARROW (Consumer) said he presumed what was in mind was timber, zinc, and other development associations. What worried him was that these people were patently pushing timber, zinc, lead, and so on. That was the reason for their existence. That was what they were paid for. He did not think objective advice and information would be obtained from them.

The PANEL MASTER asked whether it would be logical to say one could not trust a cement information service to give the true facts about cement. Therefore, one could not trust a building information centre to give the true facts about building.

Mr FARROW (Consumer) said he would expect the Reinforced Concrete Association, for instance, not to recommend the use of structural steel. That was not their job: they had a very good substitute and they would push it as much as they could.

Mr GOULDEN (Purveyor) said he had attended a meeting a week or two previously at which the main speakers were the top people in the Timber Development Association. The Director made the very point that all the specialist organizations were obviously paid to push their own materials. There was no organization that dealt with composite structures. The work of the Building Research Station was primarily in other fields, and there was no other body.

The PANEL MASTER: So we want a new one for combined operations.

Mr FARROW (Consumer) said it would have to go deeper than a new information service. It was not a simple problem at all. One wanted to know when to use timber, steel, or concrete to get a better job.

Mr WRIGHT (Purveyor) said, 'No', but thought the question difficult to answer without approaching the question of a central information service.

The PANEL MASTER said that both questions could be dealt with later. The next question was:

By what method could the small builder who was not in active communication with an information centre be kept up to date? What were the essential basic reference tools or books?

Mr CODE HOLLAND (Purveyor) said books were not much use for keeping people up to date. It took twelve months to produce a book.

The PANEL MASTER: Loose-leaf?

Mr CODE HOLLAND (Purveyor) said that one could not do much with loose-leaf unless one could sell a service, and a service could not easily be sold through the book trade. For some reason, this country did not take kindly to the loose-leaf approach, apart perhaps from the legal profession. Probably architects and builders were so used to receiving their literature for nothing from the manufacturers that they were reluctant to pay for anything.

Mr EVE (Consumer) said he did not know that he received a lot of literature for nothing from the manufacturers. He did get a good deal of information from Government publications that he found valuable, but a very limited amount came from manufacturers. He did not know the answer, except that there must be some kind of service available.

Mr DOTTRIDGE (Purveyor) said he disagreed with his co-publisher and thought books could provide a certain kind of information. That was why his company published theirs.

The small builder employed eleven or less men, and this group was particularly difficult to cover with any publication, loose-leaf, bound volume, pamphlet, magazine, and so on. There were so many of these people and they had very small offices with no filing equipment or filing methods. They were just not interested in receiving a lot of the literature that went to the bigger builders. Something would have to be specially designed for the small builder, and it was very difficult for any publisher to produce just for them because they used only a limited amount of material.

Mr CODE HOLLAND (Purveyor) pointed out that garage keepers accepted loose-leaf. Even the smallest of garages often had an enormous book and kept it up to date. He agreed that the small builder was not interested, but there was no reason why he should not be.

The PANEL MASTER: Psychological research into the garage keeper and the small builder?

Mr WRIGHT (Purveyor) said the small builder probably failed to use an information centre because he was so far away that he had no contact with it, was far too busy to be bothered with making an inquiry, and anyway wanted the information yesterday! It might be necessary to arrange something locally with a liaison officer who could visit the builder.

The PANEL MASTER asked whether Mr Wright could suggest some basic tools and how to produce them.

Mr WRIGHT (Purveyor) said he could only suggest loose-leaf. He did not see why the small builder could not be persuaded to use an information centre, and a loose-leaf folder.

Mr FARROW (Consumer) pointed out that a garage was a static organization: it did not move. The builder had to visit all the sites and explain what he wanted to the operatives on the job. These sites might be muddy and so on and it was difficult to keep information in a reasonable form. To keep it under cover inside any one place was one thing; it was quite another to take it round and use it effectively on the site. He did not know how this problem could be solved.

Mr GOULDEN (Purveyor) said that at least two systems of distribution were represented at the conference. This was one way of getting the literature disseminated, but there were economic difficulties in the organization of a distribution system.

The PANEL MASTER asked whether anything was now done with loose-leaf or small books for the small builder.

Mr NISBET (FRICS, Chief Quantity Surveyor, War Office) said he must come back to his television idea.

As far as the garage proprietor was concerned, he had probably been trained by means of instruction and diagrams to read and learn about engines and bodywork. The builder had probably not been trained in that way but had watched his journeyman planing wood and fixing bricks and so on. He had been taught visually: he learned visually and only visually. The way to reach the small builder was through television.

Mr BASON (R. H. Harry Stanger) expressed the view that too much emphasis had been placed on up-to-date information. His firm, he said, had connections with many architects and builders who would be much better off if they were up to 1939! Hence, there was less need for loose-leaf material and the book publisher was being unduly modest.

Mr BULLIVANT (Consumer) said he always wept when he heard about the little chap who had such a terribly hard time. There was a size so small that if the information was not in his head or his pocket he had better not have it at all, for it would only lead to trouble. But the small architect did shift the focus a little. His work was different from that of a peripatetic chap who went from site to site. He wanted information to hand in his book or his head. Very few offices were so small that they could not manage a small reference filing system and most offices had something of the kind already.

The snag was not the cost of publications or the equipment of the library. What they could not afford was the cost of keeping the system organized, accessible, and moderately efficient, so that an indication of the answer to a problem could be found on fifty per cent of the occasions. It was not easy to reach even that level of efficiency. An office might spend £50 or £100 a year on publications, but the cost of an assistant's time in an architect's or builder's office could not be far short of, say, £10 a day per assistant. To spend half an hour in seeking information was therefore a costly business.

Mr FARROW (Consumer) disagreed with Mr Nisbet about television. It was useful in teaching people that they ought to know more about a subject, but to try to put into effect some of the information given in *The Archers* would have pretty disastrous results.

The PANEL MASTER noted the suggestion that books were not wholly useless and that something more up to date than 1939 would be welcome or at least useful.

Next question:

Several people had suggested at the morning session that the wrong people wrote the literature. Had the Panel any views on how to find the right authors for building literature, taking the two levels—trade literature on the one hand, which it was suggested the manufacturers should not write themselves or hand over to the advertising agent, and other literature?

Mr CODE HOLLAND (Purveyor) said that the difficulty was not to find the authors but to persuade them to write. The reward was not sufficient to justify it.

The PANEL MASTER asked whether the answer was to pay them more.

Mr CODE HOLLAND (Purveyor) replied that it became an economic problem related to the cost of the book. If qualified architects or builders were to be persuaded to write books it would have to be on a patriotic basis.

The PANEL MASTER asked whether it was thought better to publish a bad book cheaply than a good book for what it cost to get a good author.

Mr CODE HOLLAND (Purveyor) replied that it was not a question of good or bad books but of the books that were wanted.

The PANEL MASTER pointed out that some people had suggested that the wrong books were provided.

Mr CODE HOLLAND (Purveyor) replied that it was a matter of opinion. He certainly did not believe all the books were wrong and sales did not show they were.

Mr WRIGHT (Purveyor) said that the payment for the book was not the only factor. It was very true that people had no time to write, and he was inclined to think Mr Code Holland's reference to the national interest was important. The most authoritative person to write the book ought to be approached from the national point of view and given time from his normal duties to prepare the manuscript. Thus if a textbook is required, the firm or local authority should be asked to release the writer so that the task can be completed.

Mr DOTTRIDGE (Purveyor) remarked that trade literature was slightly different from books. A manufacturer could write trade literature himself, either badly or quite well, or go to his advertising agent, who could also write well or badly. Some advertising agents were highly specialized in building trade matters and employed special staff. Each piece of literature depended on the writer. There were also firms who disseminated information and who would write for the manufacturers.

He was speaking for himself, but other firms were represented at the conference who also provided a service and employed architects to write trade literature for architects to read. They believed the literature produced by this method was of a much higher standard because it gave proper technical information.

These firms were up against a greater difficulty in England of getting the very powerful advertising agencies to follow their advice. It was often a matter of compromise between the agency and the producer of the literature. They should work together, and this was being done more and more. It was costly and a lot of money had been spent in propaganda, amounting to thousands of pounds over the past few years.

Mr ARUP (Consumer) emphasized that the importance of the right books could not be overestimated. This country was very much behind other countries in providing the right textbooks for students. The basic information on physics, statics and so on—as distinct from recent research—was not known and the Government ought to take in hand the duty of providing this information. It could not be done by the publishers.

When the publisher saw the need for a book he could not always find the right person to write it. He might find someone but not always the right author. It was not only a question of tabulating information but of digesting and sifting and throwing out unnecessary information. As soon as, in course of time, information became public property it should be co-ordinated and presented in a systematic manner and made available to everybody.

The PANEL MASTER said she had a 'quickie' which was directed to the Consumers:

How far do consumers find a. *annual progress reviews in various periodicals and* b. *abstracts necessary or valuable?*

Mr FARROW (Consumer) said that he did not know before that there *was* an annual progress review, but he knew now!

Mr EVE (Consumer) said that he was in the same position. Abstracts would be of no particular assistance to him unless he had a special job.

Mr GOULDEN (Purveyor) asked whether the conference might be told what was an annual progress review.

The PANEL MASTER invited Mr Agard Evans to reply to this request.

Mr AGARD EVANS (Ministry of Works Library) said that that excellent weekly periodical *The Builder* produced in January a very good review on building topics. As he was not a builder, he could not assess it correctly but he hoped the users could, and he believed it was good.

Abstracts were well known to information officers, librarians and others, and they served a useful purpose. Whether they formed reading matter for the actual practitioner was another matter.

Mr FARROW (Consumer) said *The Builder* in January was so big that it frightened him and he put it in his out-tray at once. He must have another look at it next year.

Mr ARUP (Consumer) thought it useful to have a review of what had happened in different kinds of building construction. Some publications, such as those of the Cement and Concrete Association giving an account of jobs done in concrete, were extremely useful.

Mr BULLIVANT (Consumer) pointed out that there were periodical articles, not necessarily annual progress reviews, which reviewed progress and significant advances over a number of years in different fields. They drew attention to signposts on the way at various times, which one might have noted though one had forgotten in which direction they pointed. The publication *Specification* was a good example. It contained a number of 'integrating' articles which gave in a compact form a good review of progress. It had had one of the best concentrated integrated articles on lighting ever produced.

The subject of Abstracts was a very big one. It was an extraordinary fact that in this country there was no regular comprehensive review of current information for building. Whether one liked the word 'abstract' or the form of an abstract was another matter, but if abstracts were done properly they had the great advantage of giving a summary of what had been produced from one point of time to another.

There were three efforts of this kind in this country but they were not co-ordinated—the Building Science *Abstracts*, the RIBA *Library Bulletin* and the Ministry of Works Library *Bulletin*. All were prepared on a different basis, presented in a different way and available in a different way—subscription or on application or a personal approach through the back door. They needed to be replaced by one service that was comprehensive enough to be useful to the practitioner, as is available for building in practically every European country, all produced to an international standard.

The PANEL MASTER said there were two questions on technical colleges which could be taken together:

What part can technical colleges play a. *in helping to disseminate information in the provinces and* b. *in making available original literature by loan and/or copying?*

What could be done towards the training of students and others in the use of literature and information services?

Mr GOULDEN (Purveyor) remarked that the technical college would be a good place in which to put regional information centres.

Mr WRIGHT (Purveyor) said the technical colleges could obviously play a part in the dissemination of information, but how far they could go would depend entirely on the finances with which they were provided by the local authority. They could make available original literature by loan or by copying, but again it depended entirely on how much money was available. Certainly in technical education the specialists, equipment and the link with industry were all present—a suitable foundation for an information service.

Technical colleges ought to be training students and others in the use of literature and information services but very few were doing so. Bearing in mind the number of builders and technologists and others who obtained their training in a technical college this gap in the curriculum undoubtedly created the familiar complaint that the user did not bother to use the information service. In colleges in Hertfordshire special lectures on seeking, collating, and applying facts were incorporated in most technical and craft courses. Other colleges had incorporated similar lectures in the courses they offered but the number of colleges taking this seriously formed a very small percentage of the whole. It was most important that such training should be offered in every college.

Mr EVE (Consumer) said that one of the big difficulties was the refusal of manufacturers to supply their literature to students. They should remember that whenever they refused a student they were making an enemy for the future. He had been specifically asked by past and present students to make this point on every possible occasion. He did so because of its practical importance. It was no use knowing about the literature if one could not obtain it.

Mr GOULDEN (Purveyor) said that if Mr Eve would send their names and addresses to the Building Centre he would obtain literature from manufacturers for any number of students.

The PANEL MASTER said that the last question was:

Is the type of centre developed in the Netherlands likely to be satisfactory in this country, having in mind the geography, population, and existing services?

There were two parts to it: first, geography. The geography of this country differed from that of the Netherlands but whether the centre should be geographically centralized or regional was not so important. It would clearly be absurd to discuss how many centres were required and how many regions there should be. The distinction made at the morning session, which *was* important, was whether the central service should be a storehouse or a telephone exchange. Should it convey, purvey, prepare and give information to the inquirer by telephone and by letter and physically in his brief-case, or should it put the inquirer in touch with the supplier of information sources?

Mr EVE (Consumer) said this was a very wide question. He thought that in the first instance there should be a telephone exchange. In the second instance, he would want the information confirmed in writing, so he would want the literature.

In the light of what had been said earlier, he would—he thought—like the literature sent to him on a standardized form encouraged by the information centre. The manufacturer should say that he stood behind the crushing strength, output and so on.

Mr FARROW (Consumer) said he was not sure he was clear about this. He had a feeling that he would like a centralized service to tell him where he could obtain information. In other words, they would collect information from existing sources. But he did not think he would like a new central organization to undertake research on a vast scale. The existing research organizations were doing an extremely good job but some co-ordination was required.

The PANEL MASTER noted that Mr Farrow would like a co-ordination centre and would not mind being sent to an existing organization for information.

Mr BULLIVANT (Consumer) said that the question could become confused if one thought of the organization doing the research itself. The Scandinavian centres undertook information work in an expert way. Conveying the results of research was entirely different from doing the research. Information work might be based on the technique of study but it was not research. The communication of knowledge was a difficult and complex problem in the modern world. Building was an industry that seemed to cry out for central co-ordination, so that organizations expert in timber, steel and the like could be assisted to transform this special knowledge into a form adapted to use by practitioners.

Mr ARUP (Consumer) supported this view. He pointed out that the consumer was faced with a certain building problem. If he wanted to design shells, for instance, in Central Africa, which had to be covered with waterproofing insulation, how should such a problem be solved? It would be unpractical to suggest that the information centre should undertake research into his problem. But it could canalize the information available and draw attention to any *materials* that were available and to the claims made for them. It could give factual information on whether a material had been used and whether there had been any failures or limitations. It could indicate how a material had been used in particular cases and what people had said about it. In other words, it could do work which he would otherwise have to do for himself. If this could be done centrally, it would be very helpful and a great step forward. He understood that this kind of work was done in Holland.

The PANEL MASTER said the Consumers seemed to agree that they wanted something done for them which they did not want to do themselves *ad hoc*. But no one had said precisely whether the centre should put inquirers in touch with the person who knew the answer or give the answer itself. She would like a reply, 'Yes' or 'No', to that.

Mr FARROW (Consumer) said he was not prepared to answer this question at the moment.

Mr EVE (Consumer) said the answer was 'Yes' for some questions and 'No' for others.

Mr BULLIVANT (Consumer) said that if the information was well documented one could avoid going to the individual, but he might be the only individual in the country so the answer was 'Yes' and 'No'.

Mr ARUP (Consumer): 'Yes' and 'No'.

The PANEL MASTER asked what the Purveyors thought about this.

Mr WRIGHT (Purveyor) said he found it very confusing. First of all, who was the user and what did he want? Was he capable of saying what he wanted? Probably half could and half could not, so a central organization would have a heavy telephone load. Secondly, would inquirers be capable of expressing what they wanted in writing? He had grave doubts. For this and other reasons, local centres were needed where queries could be discussed.

For the rest, even a main centre would have difficulty in providing all the information required. The field was so enormous that no one organization could hope to cover it. Research organizations would have to help, the centre acting as a transmission agent. The best course would be to put the inquirer in touch with the person most likely to be able to assist him.

The PANEL MASTER noted that this was one point of clarification—give complete information or put the inquirer in touch with someone, acting as middle man.

Mr CODE HOLLAND (Purveyor) said that obviously he had no views on this question.

Mr GOULDEN (Purveyor) said the basic principle on which an information centre should work was that an architect or anyone else could come in and ask a question and obtain the information without the manufacturer being informed. The Building Centre was formed so that architects should not have travellers on their doorsteps. They could always communicate with firms if they wanted to follow up information. To put them in touch with a firm would be contrary to the basic principle on which the Building Centre worked.

It would be shocking waste of money for a central organization to re-edit all the information pushed out by a thousand and one research organizations in England.

As to improving the standard of trade literature, they had been trying to do it for twenty-five years. They were on the way, but when they had gone all the way they would still only be agents: they knew the people who knew.

Mr Arup wanted someone to do the work for him. Why didn't he apply to the Building Centre? They might not know all the answers. It would be helpful if they had another ten chaps but they could not afford them. They believed the big users, builders, quantity surveyors and so on—the top chaps—should get together and direct them in the way they should go. There should be a hub in London with Telex connections to many information services throughout the country, so that a builder could ring up and get an answer to his problem, the red-hot answer, which could be obtained from the nerve centre if the local man did not know. As for middle men, they did not act in that way unless they were asked to.

It was a terrible thing to say before Mr Dottridge, but he would say, 'Architects, throw away your files. Ring up the information centre.'

Mr DOTTRIDGE (Purveyor) said the problem was not to find money for ten Mr Gouldens so much as to find ten Mr Gouldens. He would not say 'Throw away your files', for the files were used. At the same time, he supported Mr Goulden and the aims of the Building Centre. Research and other places in this country should be kept separate. Scandinavian countries were small and fairly compact and the number of manufacturers was small. In this country, on the other hand, there were seven thousand manufacturers making products for the building trade. They disseminated information through nearly four hundred and fifty different advertising agents—each of whom believed they knew the best way to present information. It was extremely difficult to bring them all together. The drive at the moment, as Mr Goulden had said, was to get them to present their information uniformly.

Architects or users requiring information could go to the Building Centre—and he would not mind betting that few of those present had ever gone to it with a problem. Regional offices with Telex could be as useful to the small builder as to the larger architectural firm.

Mr BRUNTON (DIP ARCH, ARIBA) welcomed the idea of regional centres as the main source of information on big questions. But most builders and certainly architects, he pointed out, had a hundred and one questions to which they wanted an answer in ten minutes or a quarter of an hour. That was the problem. It could only be solved by a subscription set-up for providing the essential information. The central organization would have to decide what was essential information.

Mr WILSON (Director of Aslib) said there had been a number of references during the morning session to the translation of foreign material. It might not be known generally that certain schemes of co-operative action were already in existence, including an index at Aslib headquarters of foreign scientific and technical articles translated into English or occasionally into another well-known European language, covering the whole of the British Commonwealth. It contained 40,000 or 50,000 articles and some 7,000 were added every year. It could be ascertained by telephoning Aslib whether an article had been translated and if so where it could be obtained. If a translation was not available, inquirers could be put in touch with a translator who was qualified from both the linguistic and subject points of view.

If it was not churlish to refer to the next conference before the present one was out of the doors, he might mention that on 15th January 1960 there would be a whole-day conference at the Connaught Rooms on co-operative schemes in translation services.

Mr MARTIN (A. M. Gear & Associates) said he had heard nothing so far during the discussion about the well-known Sweet's *Catalogue*. Could not this idea be adopted here? It was produced in standard form and, on a request by telephone, manufacturers would send a copy of the pages required. He believed this catalogue cost about £70 a few years ago to bring in from America, where it was deposited in every architect's office: at the end of every year, a new one was given in exchange for the old one.

Mr DOTTRIDGE (Purveyor) said, as publisher of the *Architects Standard Catalogue*, that this contained information on over 1,500 firms in page format with a standard type of heading and information bound in five volumes. Sweet's *Catalogue* of nine volumes covered only 1,800-odd firms for the whole of America, so it was not a national coverage. It contained all the big firms and gave comprehensive information. The *Standard Catalogue* covered about 1,570 firms but only gave brief information. The architect could then contact the firm in the same way as in America, and they would send him their brochure.

The PANEL MASTER said that in drawing the discussion to a close, she would only say 'Thank you very much for being patient'. For questions not asked or inadequately dealt with, she would only say it was difficult to plan so closely and still do justice to every question.

CHAIRMAN'S SUMMARY

The CHAIRMAN, in closing the conference, said that (as a mere layman and in a seventh of the time spent in discussion that afternoon) he was asked to sum up—he hoped intelligently—the feeling of the meeting. As far as he could see, the meeting had no feeling though its members had!

The thirteen questions on the menu would appear to boil down to seven. He proposed to read them out in order to give form to what he had to say. They were in simpler terms than the questions on the menu:

1. Is the information there?
2. Why is it not used?
3. Should the building industry spend more on dissemination?
4. How do we (or they) keep up to date?
5. Who should do the writing?
6. Who should teach whom, how, where?
7. Should information be available centrally?

A long time ago he had sung a song to an audience far away, among who was

Mr Arup, about the building industry. It went to the tune of that fickle gentleman 'The Vicar of Bray', and the first verse ran something like this:

' The Architect's a friend of mine,
He earns his bread and butter;
A master he of good design
From cellar up to gutter.
He's had to train his cultured brain
To think in black and white, Sir,
And not disdain that old refrain,
"Your client's always right, Sir." '

He would not retail the verses dealing with the quantity surveyor, the consulting engineer, and the contractor. They would not be fit for such an audience as this. But there was a chorus which seemed to apply, and it went like this:

' The gap is mighty wide between
The expert and the user;
Where knowledge of technique is lean,
The client is the loser.'

Listening, as a layman, to all that had been said, it did seem to him remarkable that in all the repartee flung to and fro about Britain's largest single industry (it was certainly larger now than coal, agriculture and cotton, in numbers employed and output) there should, in the first place, be so much divergence of opinion. Secondly, there seemed to be little co-ordination of information; and he did not want to beg the question at the start. It would seem also that on both sides of this deep gulf there was considerable misuse at various points of the terms 'information' and 'research'. The point was a common one, he thought, and applicable not only to the building industry. But certainly looking something up in an established source of information was not 'research' in its true sense. It should be clear that there was a wide difference between what was already known and could be made further available—this was called dissemination by several people—and exploring on the very fringe of knowledge into the unknown. This he took to be the field where true research took place. So he used the terms 'information' and 'research', in what he had to say, with those two possibly blurred but still, he hoped, defined definitions.

Was the information there? The consensus of opinion was certainly that it was there, but that it was not made available on the many levels at which it was required, from the throw-away leaflet nobody read to the chemical analysis of cement or paint or anything else which nobody could understand. Both were necessary; both must be there; and both must be get-at-able. If the afternoon had not been entirely wasted, therefore, the information must be served up *à la carte* in the various forms in which it was required for everybody from the intelligent or less intelligent apprentice right up to the gentleman in the bowler hat who seldom went round seeing the job he was in charge of. That—as someone had said very clearly—was extraordinarily difficult, because the composite mind of the building team which really wanted information did not consist of any one person, but of a great many.

Various aspersions were cast by the Consumers about the unreliability of the information available, but the Purveyors hotly denied them. The question was asked whether the Consumers were expected to test everything that was stated in the literature, and one or two people, particularly Mr Dottridge, replied that all decent British manufacturers took considerable trouble to test their claims before they went into print.

Then why was the information not used? Why were there not more sources of information in catalogue form, such as that of the Swedes in Scandinavia or Sweet's *Catalogue* in the United States?

First of all—and Mr Wright had made this point clearly—the art of reading was not taught after 11 or 12+. This had much to do with the whole problem, not only in building but in other fields. Mr Stanley Farrow made the opposing point that people were in danger of becoming too long-haired and doing too much reading and not enough hard work. In the present day and age this also had force, although Mr Code Holland, as a publisher, violently disagreed. It was not for the Chairman to start on the rights and wrongs of that.

From the floor of the house Mrs Jenkins of Bristol made the sound point, which others took up in various ways afterwards, that there were other ways of disseminating information nowadays than the printed word and that they should be used as well, not that they should be used instead of the printed word. She suggested dialling, and some people might know of *Nummer Elf* in Switzerland, the only country to have this on an elaborate scale. One could dial 11 on any telephone and ask what was the depth of the Atlantic or who was President now or in 1901, and get an answer by return for the price of one call. If the answer could not be given by return because *Nummer Elf* did not know, the cost was twice the price of one call. It did work, and it was ingenious. It was more than the 'Girl with the Golden Voice' in this country, on the time clock.

In contrast to Mrs Jenkins, Mr Nisbet of the Royal Institution of Chartered Surveyors wanted *The Archers* on television to devote attention to the building world, and Mr Goulden leapt in to say he was already trying to persuade the unpersuadable BBC that television was a more potent medium than radio, and that on Network Three there was already a programme as the fruits of his advice.

Should the building industry spend more on dissemination? Here again there were marked differences of opinion. Mr Farrow said 'No'. He thought more should be spent on research (using the word in his, the Chairman's, sense) and on dissemination at the same time—more on 'coming forward' and less on what was apparently known technically as 'come on' stuff.

Elsewhere, could specialized information services—timber, cement, zinc and so on—be trusted? He hastened to add that his company was the only roller of sheet zinc in Britain and was a main supporter of the Zinc Development Association. It had the highest ethical standards.

Once or twice it was said that the Building Research Station was not enough, because its programme was too fixed and therefore too unalterable, and too far concerned with research as opposed to information alone. In other words, like life, the building industry was a pudding full of plums, and there was room for a great deal more access to it.

'How do we (or they) keep up to date?' Mr Code Holland pointed out that books took twelve months to produce and therefore might not be the best way of keeping up to date, to which the answer was made that a large part of the building industry had not yet reached 1939 and by implication books were therefore still valuable, a consolation to all publishers.

There was a curious idea that British builders did not take to loose-leaf systems, though static garages did. This was a subject in which he happened to be very interested. He dealt as a manufacturer with a technical product and some of his customers were in the building trade. With a loose-leaf system a page could be scrapped and replaced by another instead of scrapping a book costing two or three guineas. There was an enormous divergence in the trades and industries that could use loose-leaf and he would differ from the view that only garages could do so. He realized that some of the motor firms published the most superb loose-leaf arrangements, particularly on the maintenance of their ever-changing models; but many other industries did have loose-leaf systems which were well looked after. With great respect to Mr Farrow, it was not only a question of whether the book had to go out into the rain but also of whether the person concerned had the kind of mind that led him when stuck to look up the answer, and not guess or jump to the opposite conclusion. His own experience suggested that loose-leaf systems run in pages were not nearly so good as loose-leaf binders, preferably with a waterproof cover, to hold pamphlets and booklets. They were easier to change and lasted longer, and they stood up better to rough use in and out of doors.

Who should write what was to be written if it was not already in being? Mr Arup pointed out that it was vital for the right books to be available and that many British textbooks, not only in this field, were inadequate. From the discussion, one gathered that there were plenty of writers but they were too busy and should be approached nationally, whatever that might mean, and asked to be authors—when they would pay their advertising agents to do it for them.

Mr Wright and others very properly said, as one would expect, that the technical colleges would be the right place for technical information centres for the building industry and for other industries. They were also the natural centres at which teaching, both academic and practical, could be provided in so far as it was not provided on the job. He did not think there was any real difference of opinion about this. And at this point came the one practical contribution to the whole afternoon, as far as he could detect. It was new to him. Mr Richard Eve complained that manufacturers could not afford to let students have literature, and Mr Goulden offered to provide it, on the middleman basis of no cost, for students who wanted it.

Lastly, should information be available centrally, whether central was defined as central or regional? On the Consumers' side, there was complete chaos. They had no opinions at all, which seemed to indicate that they were not accustomed to using information. On the Purveyors' side, there were two 'Don't knows' and one 'Aye' from Store Street. Mr Goulden's colleague generously supported him, and architects were told to ring up the Building Centre when stuck.

The final sallies from the floor came from Mr Brunton, Mr Wilson and Mr Martin. Mr Brunton said speed was essential in making available, purveying, and using information. He appeared to dislike the telephone or Telex and to prefer information in writing, but one wondered whether this was as quick as some of the other systems. Mr Wilson had done a little quiet advertising for the next conference on 'Translation' and Mr Martin asked for something in Britain as good as Sweet's *Catalogue* in at least seventeen volumes!

From this it would be realized than an enjoyable afternoon had been had by all. The results might not be valuable in terms of practical findings but he thought they would be greatly valued as people went home and thought about them. The smallest ideas of other people were always more precious than reading about them dead in textbooks.

In winding up the conference, he had been asked particularly to thank those who had dealt so ably with the morning session. He had not been present, but he felt sure it was very well done by Mr Norman Longley, Mr Agard Evans and Mr Keith Martin. He was further asked to thank the Purveyors and Consumers for their invaluable contributions to the afternoon session, a great strain. He had also to thank Miss Barbara Kyle for her very skilled, lively, and sparkling guidance of the Panel. For her a very special hand was required. (*Applause.*)

Lastly, in declaring the conference closed, he would like on behalf of those present to express special thanks to all the staff of Aslib for all they had done for weeks and months past, and right up to the present moment, to make this occasion (and the report which would follow it) possible.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d.* per word, minimum 5*s.* An additional charge of 6*d.* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

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ASLIB. RESEARCH ASSISTANT required for Research Department engaged in planning and carrying out investigations of problems relating to the communication and use of scientific and other specialized information, with particular reference to special libraries and information services. Candidates should preferably be graduates with some experience in one or more of the following fields: research in natural or social science, librarianship, technical information, statistics. Salary scale £850 × 40–£1,010. Applications in writing to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

Found

Proc. Phys. Soc. Vol. xxxiv. Press mark QC1.P5. Apply Hume, UFAW (Universities Federation for Animal Welfare), 7A Lamb's Conduit Passage, London, W.C.1.

Wanted

Metallurgical abstracts, vol. 25, 1958. Librarian, The Royal College of Science and Technology, The Andersonian Library, George Street, Glasgow, C.1.

CALCUTTA UNIVERSITY
CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 March 1960 Number 3

ASLIB CALENDAR

MARCH

TUESDAY 22nd. Course on Information Searching.

WEDNESDAY 23rd. Midlands Branch Annual General Meeting at Birmingham.

Film Production Librarians Group meeting at Shell-Mex House.

FRIDAY 25th. Northern Branch Annual General Meeting. See paragraph below.

*Winter meeting. See paragraph below.

APRIL

TUESDAY 5th. Winter meeting. B. C. Vickery on machine searching and translation.

WEDNESDAY 6th. Engineering Group meeting. See paragraph below.

FRIDAY 8th – SUNDAY 10th. Aeronautical Group conference at Cranfield. See paragraph below.

WEDNESDAY 27th. Film Production Librarians Group meeting.

MAY

FRIDAY 6th – SUNDAY 8th. Electronics Group conference at Ashridge.

WEDNESDAY 18th. Economics Group visit to Unilever Ltd, Toilet Preparations Development Unit.

WEDNESDAY 25th. Film Production Librarians Group Annual General Meeting.

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

* Previously announced for Thursday 31st.

Engagement

Many members will be pleased to know that Miss Anne Turnbull, Meetings Organizer, Aslib, has announced her engagement to Mr Jim Elphick who was, for some six months during 1959, Accountant to the association. Miss Turnbull has given fifteen years of devoted service to Aslib and is the only remaining member of the staff who remembers the small Bloomsbury offices and who served under Miss Ditmas, the first Director. We wish her and her fiancé every happiness in the future and are glad that she means to carry on with her work after her marriage on Wednesday 18th May.

Winter Meeting

A winter meeting will be held at 5.30 for 6 p.m. on Friday 25th March at Aslib. The speaker will be Professor S. M. Lisichkin, Deputy Director, Institute of Scientific Information of the Academy of Sciences of the USSR. He will talk about the work of the Institute, which is said to be the largest abstracting organization in the world, employing a full-time staff of some 2,000 with a further 40,000 part-time workers. Coverage is world-wide and subjects at present include astronomy, physics, chemistry, and engineering. Work has also been started on medical sciences. The Chairman will be Professor J. D. Bernal, MA, FRS.

Aslib Cranfield Research Project

A further grant of £6,000 has been made by the National Science Foundation to Aslib for the continuation of an investigation into the comparative efficiency of various indexing systems (see *Aslib Proceedings*, vol. 11, nos. 8 and 9, p. 194). The original grant was made by the National Science Foundation in 1957 and since then three members of the staff of Aslib have been working on the first stage of the project, under the direction of Mr Cyril Cleverdon, Librarian, College of Aeronautics. This part of the investigation required the indexing of 18,000 documents by four different systems and will be completed this month. The new grant will cover the testing and the analysis of results and this is expected to be completed by September 1961.

Northern Branch

The Annual General Meeting will commence at 11.30 a.m. on Friday 25th March in the Central Library, Manchester. The subject for the afternoon session will be quick reading and the speaker will be Mr R. Gregory, Public Relations Officer, Carborundum Company Ltd.

Scottish Branch

Much of the original programme* for the Annual General Meeting, held on 5th February in Edinburgh, had to be abandoned but the substitute programme made up for the loss. After the business meeting, at which the Honorary Secretary and Honorary Treasurer were re-elected, Miss I. M. Slade of the British Iron and Steel Research Association gave a paper entitled 'Conclusions drawn from surveys of the use of technical information'. This was similar to the paper given at Aslib's Thirty-fourth Annual Conference* but reaching a new audience as only some half dozen of those present had been able to attend the conference. The second paper of the morning session was on aspects of technical editing and was given by Mr James Revie, Technical Editor, United Kingdom Atomic Energy Authority, Dounreay Experimental Reactor Establishment.

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* *Aslib Proceedings*, vol. 12, no. 1, January 1960, p. 3.

In the afternoon, Miss Margaret Lamb, Education Officer, Royal College of Nursing, spoke amusingly and instructively about the courses in rapid reading that have been instituted in Edinburgh and are popular with doctors, lawyers, and research workers as well as with her own nursing profession. Miss Lamb also gave the meeting a test for rapid reading and comprehension, the results of which are not for publication. Mr I. F. Clarke, recently appointed Lecturer in General Studies, Royal College of Science and Technology, Glasgow, then described a course designed to bridge the gap between the educational programmes of arts and science students, under the title 'General education for technologists'.

Aeronautical Group

The programme for the Aeronautical Group conference includes, in addition to items announced in the February issue†: discussion groups on issue systems, periodical receipt and circulation methods, the work of an information officer, and information bulletins; papers by Professor R. O. Kapp B SC (ENG), MIEE, on conveyance of information; and by the Director on the aims of Aslib, the services it provides, and its relation to the Groups.

Engineering Group

A meeting will be held at 5.30 for 6 p.m. at Aslib on Wednesday 6th April. The speaker will be Mr S. Molian, Consulting Engineer, on machines that read and write. His talk will be illustrated with slides and will cover, broadly and non-technically, electronic reading and writing including paper-handling machinery.

Data Processing

Two different journals are now being published under the title *Data processing*. One is an English quarterly which started with the issue dated January–March 1959 and is published by Iliffe & Sons at an annual subscription of £4. The other is an American publication which has undergone two changes of title in the course of a year. It began with a charter issue for November–December 1958 under the title *Machine accounting and data processing*. In May–June 1959 it became *Punched card data processing*, and the January 1960 issue reveals that the title is now *Data processing* and that the journal will in future appear monthly instead of every two months. The publishers are Gille Associates Inc., 956 Maccabees Building, Detroit 2, Michigan, USA, and the annual subscription outside North America is $8.50 (61*s.* approx.)

* *Aslib Proceedings*, vol. 11, no. 12, December 1959, pp. 313–7.
† *Aslib Proceedings*, vol. 12, no. 2, p. 47.

Coke and Chemistry U.S.S.R.

A cover-to-cover English translation of the Russian technical journal *Koks i khimiya* is now published under the title *Coke and chemistry U.S.S.*R. The translation is sponsored by DSIR and produced by the Coal Tar Research Association in collaboration with the British Coke Research Association. The annual subscription is 5 guineas or $16, single copies £1 or $3, post free, half price to university and technical college libraries. Further information, specimen copies, and order forms may be obtained from the Intelligence Officer, The Coal Tar Research Association, Oxford Road, Gomersal, Leeds, or from the Information Officer, the British Coke Research Association, Chesterfield, Derbyshire.

Iron and Steel Index Card Service

The Iron and Steel Institute is now offering abstract and book-title index card services. Index cards bear abstracts or titles of new books, as published in the *Journal of the Iron and Steel Institute*, classified by UDC. The cards (5 in. by 3 in.) are distributed to subscribers fortnightly in advance of publication in the journal. About 9,000 abstracts and about 500 book titles will be covered each year. The service commenced with material published in the journal in January. Subscriptions are available from January to December inclusive: abstract cards, £90 for one set, £25 for each additional set; book-title cards, £60 for one set, £18 for each additional set; packing and postage extra. All inquiries and subscription orders should be addressed to the Secretary, The Iron and Steel Institute, 4 Grosvenor Gardens, London, S.W.1.

Punched-card Abstracting Service

A new abstracting service entitled *Instrumentation abstracts* has been inaugurated in Chicago. Abstracts are supplied on 5 in. by 8 in. Unisort punched cards. The service is intended to cover all significant articles on instrumentation of interest to technicians in the chemical, petrochemical, petroleum, food, steel, and glass industries, both American and foreign. Some seventy journals will be searched regularly and others will be watched for articles on instrumentation. It is expected that approximately fifty abstracts will be distributed weekly. Further information and subscription rates can be obtained from Instrumentation Abstracts, 80 East Jackson Boulevard, Chicago 4, Illinois.

New International Information Centre

A new centre to be known as the International Occupational Safety and Health Information Centre (CIS) has been established in Geneva. CIS is the result of negotiations carried out over the past two years by the International Labour Office (ILO) and the International Social Security Association (ISSA) with a number of specialized national institutions.

The primary purpose of CIS is to supply as promptly and cheaply as possible full information relating to occupational safety and health, especially accident prevention. The principal safety and health centres of eleven countries have already agreed to supply abstracts of information concerning industrial safety and health for CIS to co-ordinate and redistribute to subscribers, in the form of index cards. The working languages are English, French, and German.

Inquiries and subscriptions should be addressed to the following national institutions in the countries concerned: General Accident Insurance Institute, Vienna; Belgian Manufacturers' Association, Brussels; Labour Inspection Directorate, Copenhagen; National Safety Institute, Paris; Federal Institute for Labour Protection, Coblenz; National Accident Prevention Institute, Rome; Central Labour Inspection Service, The Hague; Labour Inspection Directorate, Oslo; Royal Labour Protection Board, Stockholm; Swiss National Accident Insurance Office, Lucerne; Royal Society for the Prevention of Accidents, London; or direct to CIS, c/o ILO, 154 route de Lausanne, Geneva, Switzerland. Unesco coupons may be used. The cost to British subscribers is £14 5*s*. per annum.

Agricultural Library and Documentation Conference

The International Association of Agricultural Librarians and Documentalists (IAALD) has announced a working conference on international co-operation among agricultural librarians and documentalists, to be held at the Landwirtschaftliche Hochschule, Stuttgart-Hohenheim, Germany, on 25th and 26th April. The conference will be open to non-members of IAALD. Further details are available from D. H. Boalch, Librarian, Rothamsted Experimental Station, Harpenden, Herts., England; Dr H. D. Griesau, Heerstrasse 110, Bad Godesberg, Germany; or T. P. Loosjes, Library Agric. University, 1A, Gen. Foulkesweg, Wageningen, Netherlands.

Inventaire des périodiques étrangers reçus en France

The second edition of this useful work has recently been published by Inventaire Permanent des Périodiques Etrangers en Cours (IPPEC). It is a union catalogue of foreign periodicals currently received by French libraries and documentation centres during the years 1957–8. Locations are given for more than 25,000 titles in nearly 2,000 libraries. The work consists of an alphabetical list of participating organizations, an alphabetical list by titles of the journals received, with location symbols, and a key to the location symbols giving the exact titles of the organizations and their full addresses. The work costs 8,000 (old) francs and may be obtained from Bibliothèque Nationale, Service de vente des catalogues, 58 rue Richelieu, Paris 2e.

Bibliography for Engineering Libraries

The Engineering Societies Library, New York, has announced publication of ESL Bibliography no. 14: *Bibliography on filing, classification, and indexing systems for engineering offices and libraries.* It covers books, pamphlets, and magazine articles on filing, classification, and indexing; lists of subject headings; and hand-sorted punched-card systems for organizing small collections of engineering books, correspondence, abstracts, drawings, maps, and catalogues. A subject index is included and an introduction in which selection and use of the systems are discussed. ESL Bibliography no. 14 is available from the Engineering Societies Library, 29 West 39th Street, New York 18, N.Y., price $2 (14*s*. 6*d*. approx.).

Planning Library Buildings

The Council on Library Resources, Washington, has announced a grant of $73,365 towards the preparation of a book on planning college and university libraries. The project is sponsored by the Association of Research Libraries and the Association of College and Research Libraries, and the work will be carried out under the direction of Mr K. D. Metcalf, Librarian Emeritus, Harvard University. It is intended that the book shall cover the objectives of institutions and the way in which these should influence architectural planning, selection of site, cost, furniture and interior decoration, problems of moving in, and maintenance costs. It is expected that preparation of the book will take about four years, but that its publication will lead to more effective planning of library buildings and considerable savings in time, material, and costs.

NEW MEMBERS

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INFORMATION AND THE TECHNOLOGIST

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Electronics Group Conference, Ashridge, 29th to 31st May 1959

MY observations on the subject of making the technologist information-conscious may be divided into two parts. Firstly, an examination of the circumstances which make a special effort necessary; and secondly, a listing of some 'paperwork' methods of furthering the effort.

We may assume knowledge to be boundless and research to have no end and, as we have to work in these circumstances, preserving and presenting the continuous accumulation of knowledge which is both the cause and the result of research, we must face this vertiginous endlessness and still retain our reason.

So, we take this body of attainment, art, science, technology, craft, genius, experience, what you will, and call it 'information'. We do not concern ourselves with its inconclusiveness, its unpredictability. We devise schemes for forcing it into classes, pigeonholes, and boxes. We even tend to regard it as our prerogative, and become jealous of its whereabouts, self-congratulatory on being able to produce any required small part of it, frustrated when what we have is not what is wanted or what is wanted is not readily available. We are thus always vulnerable to attack on the grounds that we make a too solid barrier between the technologist and the information.

It is granted that we are driven in self-defence to many of the measures we adopt and that our inquirers and library users are unaware of the problems of documentation. We must have order and neatness and efficient records, but the scientist and technologist—he who needs and seeks or he who discovers and writes down the knowledge (or information)—is not concerned with these things. Further, authors and seekers are the same body of people, yet they remain unaware of the extent to which communication between themselves could be of value.

The scientist is indispensable; his needs must be taken care of, yet he makes so little use of information that it almost seems that his needs do not include it. It has emerged from the International Conference on Scientific Information in Washington[1] last year that only about 25 per cent. of scientists make any use of abstract journals, for example; few avail themselves of anything like all the information which could be useful to them and concern was expressed at this neglect. It seems that scientists are suspicious of order in the information field; that they prefer to learn by personal contact rather than by the written word; that they rely very largely on chance. Mr Christopher Scott, in the Social Survey[2] on the use of technical literature by technologists, underlines these facts in the results of a careful survey in the electrical and electronics industry. The level of interest shown in technical literature is very low. Twenty-nine per cent. of the technologists questioned could not recall any article in any journal which had been of direct use or interest to them. The 71 per cent. who had found such an article were divided as to 30 per cent. who had had their attention drawn to it and 41 per cent. who had found it quite by chance. The survey also showed that the more intelligent, responsible, and productive technologists were those who read the better journals and made use of information services, and that these were reading for primary stimulation rather than for specific pieces of information. It transpired also that there was little or no criticism of libraries and information services. This is important. There is no suggestion of a demand for more or better libraries or more or better services.

The evidence seems to show that if a fault lies in this situation, it lies with the technologist, whose motives for ignoring or by-passing the information could be a psychological study in themselves. It may be that he has never acquired the habit of reading. The Nuffield Foundation Pilot Survey[3] conducted in Leeds University by the Librarian and his assistant, Messrs Page and Tucker, shows that in one year (1957) 316 science students and 309 technology students did not borrow a single book from the library. On the other hand, though one science student borrowed sixty-nine books, the average borrowings were eleven for science students, and nearly nine for technology students. Consultation of material in the library was not recorded, but the figures seem to give some indication that students do not at the undergraduate stage make the use of their libraries that one would expect. The undergraduates and technologists are not alone; it is well known, and underlined recently by Mr E. Hargreaves,[4] deputy City Librarian of Birmingham, that the public library as a centre for reliable and useful information has never been accepted or understood by the general public. That books are in fact hated or feared by a large percentage of the population is suspected by many public librarians and intimated by an independent private survey described in the *Spectator*[5] recently. But if the general public do not read, maybe they are not missing very much. We are concerned with those who may be missing information vital to their firms, to research, to scientific progress in general.

Dr Topping, at the Conference on library services in technical colleges,[6] said that technologists find their lecture notes and an odd textbook or two more than enough, and only a few can search out information for themselves. As students, he says, they are loaded with facts and are seldom in the position of having to think for themselves, to apply the knowledge they have or to become aware that further knowledge is necessary or desirable. Never are they confronted by a situation (such as they find when they take a technical job) in which no knowledge is readily available. It is not of much help in these circumstances to say, 'There is the library—use it'; but this is in fact what we do when we act as if students or technologists should be able to do this instinctively. The day may come when students will have this training in universities or training colleges. It has been said, and I quote from Dr Topping's paper again, 'that critical selection and active pursuit of scientific literature is in itself a mental exercise inseparable from the highest quality of pure research'.

But what of the technologist who is already with us—we are concerned with the present and cannot wait until the necessary training is a proper part of education. Christopher Scott says, 'if we are interested in the next decade or two, we had better take the scientist broadly as we find him and build systems of information storage and dissemination around him'. As the years go by it will become more and more impossible for him to attempt to read everything in his field—as it is of course now; he must be shown the value of information services of all kinds. We may, of course, attempt to rectify the omission of training in library use and in fact introductory talks to new graduate starters in our own laboratories have shown good results. But unless these can be followed up by more library propaganda, the interest will not be maintained.

Dr Hill, in a recent White Paper[7] on the Overseas Information Service, stresses that 'the information effort, whether short-term or long-term, . . . needs to be regularly scrutinized to ensure that it is adapted to changing conditions and techniques'. *The Times*[8] points out that an information effort can only be long term and cumulative. Users of an information service are collected slowly through time and only habit and familiarity make them turn to it for help. Suspicion attaches to sudden spurts and only the inexperienced will expect a noticeable immediate response to new methods, however sparkling or ingenious. So in this matter of scrutinizing the information effort, I suppose we can scrutinize changing conditions, although in my experience *plus ça change, plus c'est la même chose*! We could scrutinize the techniques perhaps—oh, those techniques! Aghast as I am at electronic retrieval devices, mechanical translation—from the Chinese—punched card equipment, and book cradle page-turners, I wonder that the incidence of distraction among librarians is not greater. Progress in techniques must come, but we shall not by these means make changes in the human brain within a space of time short enough to be useful to us. If the scientist will not make use of information at all, no amount of clever devices for storing or retrieving will help. For whom is this mechanical paradise of information sources devised?

The problem we have is in making our technologist aware of the very existence of the store and continuous influx of valuable knowledge; in breaking through the self-sufficiency which does not admit that anything is to be learned except by direct experiment or by contact with his peers; in showing how much knowledge has been and is continuously being won by others throughout the world for him to use, combine, and develop at his will. Rival schemes of arranging reports, finance for electronic black boxes, clipping, punching, and feeding on to tape seem minor considerations.

To summarize, then, our observations of the circumstances, we find the technologist untrained in the use of libraries and information services and untrustful of them; unaware of the stores and sources of knowledge; unimpressed by order and classification in information, and preferring personal contact to the written word and direct experiment to information searching. We must take him as we find him and still make our services dynamic and communicative. It is our lines of communication which are inadequate and these it behoves us to work upon.

This paper is concerned with one of the methods a library service may use to speed information on its way to those who need it, whether they know they need it or not. So, it is not concerned with the library visit, the introductory talk, the patient service, the quick-fire publicity, the trained staff, the building and arrangement, the mechanical devices, though much could be said on these subjects. Authoritarian measures had better be forgotten altogether—they are the worst means of extending a service, as they create resentment than which nothing has a more withering effect.

We are left, then, with the information itself and the normal equipment of an average library—clerical staff, typewriters, duplicators, photocopying machines—with which to achieve a direct approach with a subtle effect.

A flow of useful paperwork, attractively presented and appropriately timed, brings observable results. The emphasis on usefulness is perhaps not out of place, as there could be said to be enough waste paper engendered by technical writers—who will write, rewrite, rehash, and review the same material *ad absurdum*. In this connection an amusing editorial appeared in *Trans. IRE*[9] recently deploring the repeated appearance by so many authors under so many titles of such papers as those on 'The optimum linear mean square filter for separating sinusoidally modulated triangular signals from randomly sampled Gaussian noise with applications to radar!' Usefulness must include news value, stimulation, a characteristic of urgency, and a sympathetic appreciation of the importance of each man's work.

We should not embark on a programme which cannot be maintained. Sporadic issues of unidentifiable lists have nuisance value only, like unwanted noise.

Most libraries, I suppose, issue some form of bulletin at regular intervals. This should be a selective, challenging item. Like a shop window, it will be the more effective for the space given to well-chosen exhibits than for the number crowded in. Ideally we should attempt to make known all available information in the fields of interest of our technologists, whether it is held in the library or not, but I feel that if a monthly or fortnightly bulletin is all we can produce, or if it is the introduction to a programme of publications, that it should contain library material only—such as can be supplied immediately on demand, or of which the whereabouts on the installation is known and can be indicated.

A long list of every single book or pamphlet acquired by the library during the period preceding the issue is probably not a good idea. Such material as annual reference books, for example, which may be expected to be in the library, may be omitted. If a bulletin contains accession lists of books, they should always be annotated. Titles alone are not always clear indications of the contents, and certainly not of the standard or purpose. A subject arrangement of material, with or without a breaking down into form divisions, is desirable; thus, reference books by class, loan books by class, pamphlets by class, translations, trade literature, standards. A contents list of some kind is useful, and, above all, it is essential to develop a style ('house style' I think it is called) which will distinguish publications both as reliable and interesting in their content and as manifestly different in physical appearance from the mass of other paper which every man finds upon his desk.

So, the library bulletin should be of a reasonable length, not to take up too much reading time; should have enough variety to show the scope of the library facilities; should be slanted according to the prevailing interests; should be attractively presented. Use should be made of colour, and neatly stapled quarto book form is preferable to dreary corner-stapled foolscap sheets. A coloured heading to foolscap sheets, if they must be used, distinguishes them from progress reports, price lists, and technical memoranda.

A request form, incorporated in the publication or stapled on to it, will perhaps encourage the man with a pen in his hand to make immediate application for some item which could be useful—especially if there is an internal postal collection and delivery and the library is more than a few steps from his office. I trust that this will not be taken for unkind comment—remember that we are taking our technologist as we find him. It is absolutely essential to be accurate in spelling, addresses, technical words, punctuation, and grammar, and desirable that all paperwork should be edited by one person in order that a uniform and consistent style should emerge. An occasional simple mistake will of course show you who is reading the item—will in fact probably disrupt the telephone service. *The authors' and printers' dictionary,*[10] by F. H. Collins, Oxford University Press, gives reliable usage in spelling and terminology; British Standards: 1629—*Bibliographical references,* 1957—*The presentation of numerical values,* 1991—*Letter symbols, signs and abbreviations,* 2509—*Periodicals of reference value; form and presentation*; *Punctuation*[11] by G. V. Carey, OUP's *Rules for readers and compositors,*[12] should all have places on an editor's shelf. The *IEE Handbook for authors*[13] is probably of more use to the technical writer.

So much for the bulletin-type production, and much that I have said about it goes for all other publications, some tried and tested examples of which I will now briefly describe. Many staff who do not read are willing to scan contents lists—and one way of encouraging this is to send out such lists, on the day of issue, of chosen journals. Reference copies of these journals must be kept in the library in this case. Those staff who are low down on the circulation lists are eager to take advantage of this service. It may be appropriate to mention that in our library this service was inaugurated by a personal visit to every man by library staff; the scheme was explained and the inevitable suspicions allayed. Occasions for changes of procedures are seldom occasions for paperwork. The personal touch is better and makes for economy in the quantity of reading matter.

Lists of theses may be selected from university lists as they come, and reinforced from Aslib *Index to theses*[14] as it appears. The latter is of course two or three years in arrears, but is still nevertheless very useful. These lists only give place in popularity to the lists of *PB Reports* with abstracts. These latter are taken from the US Government Research Reports,[15] a monthly listing of research reports available to industry. If only there were some British publication of this kind!

Other *paperasserie* which may be issued regularly and thus emphasize the service includes amendments and additions to existing standards, specifications, and data. New editions of standards should be issued automatically to all holders of the original standards.

HMSO daily lists are ready-prepared and may be sent out under a library stamp. We subscribe to several sets of these lists at the annual rate of 12*s*. 6*d*. per set posted weekly.

I come now to the introductory or explanatory write-up of library facilities. Some written description of the library and its services is very useful, especially for new starters. But I think that some concise and attractive issue such as that put out by Richard Thomas and Baldwins can do nothing but good. I have, during the last two years, prepared a series of notes on library procedures and services called *Keys to information*. Eight of these have been issued and there are two more to come. They are issued at intervals of three or four months and when there is a break for any reason in the issue of other material. They attempt to explain the methods by which information may be sought—the techniques and the sources, and are titled as follows:

1. *The classification scheme.*
2. *The card catalogue.*
3. *Indexes.*
4. *Abstracts.*
5. *Bibliographies.*
6. *Reference books.*
7. *Interlibrary loans.*
8. *Photocopies and microfilms.*
9. *Industrial and commercial information.*
10. *Personal service.*

Two have already needed reissuing and the opportunity was taken to bring them up to date on these occasions. When the set is complete they will be highly condensed and issued as an introductory booklet.

The annual list of periodicals which are available for circulation must not be forgotten. In our library this is one of the few items which is issued on foolscap paper, and, I think, is the only type of issue which looks well in that size.

Now the vexed question of abstracts—to issue or not to issue; are they read; would they relieve the burden of reading? Do you really want to attempt to obtain complete coverage?

I think, and I say this with diffidence, aware that to some it may be heresy, that *Science abstracts* A and B and the abstracts of *Radio and electronic engineer*, supplemented by such publications as *Index aeronauticus*, *PERA abstracts*, and those in the fringe subjects of plastics, metals, and so on, are probably adequate in our field. Also, author summaries of very many articles are given in the journals, and if your technologists see these journals it could be that adding to the sum total will be the last straw. Professor Bernal is of the opinion[16] that abstracts cannot, by reason of delays in process of making and publishing, be useful in keeping up to date—nor are they of any value to scientists.

Our practice is to subscribe to all abstract journals which have a bearing on the work. In addition to *Science abstracts* ordinary issues A and B, we also subscribe to issue B (Electrical Engineering) printed on one side only. From these we select those abstracts applicable, cut them out, mount them on cards and send them out to selected experts in the various fields—a waveguide collection; an antenna collection; a machines and transformers collection, and others.

However, if it is felt that the library should abstract for any special reason—a special or new project for example—then the following points may perhaps be worthy of notice.

1. They should be prepared by people with a wide, if not deep, knowledge of the subjects. The possibility of having them made by scientific staff for compilation by the library should be considered, but the urging which would probably be necessary and the delay which would be inevitable, would probably render this course inadvisable. But whoever makes them, rapid and accurate scanning is essential.

2. Consider what staff time is available. Mr Boodson of ICI Metals Division, at a recent course at Aslib, was of the opinion that twenty hours per week, or half unit staff at intermediate level plus typing facilities, could produce a weekly list of titles with short notes.

3. Consider the debit of library staff time, materials, production, and distribution against the credit of scientific staff served, the time saved in their reading, the possibility that even occasionally some piece of information may come to light which will result in prestige or profit for the firm.

4. Use an appropriate approach for different types of staff. Indicative abstracts are usually adequate for scientific staff, who, if they are interested, must read the whole article; informative abstracts are usually acceptable to management and administration.

5. Style should be watched as in other publications; abstracts should be readable. There should be good spacing and margins. A minimum of 100 words and a maximum of 500 words was suggested at the Aslib course, but length depends on the type of article among other considerations.

6. Abstracts should present material impartially, as given by the author. If inaccurate the word *sic* may be used. If criticism creeps in the abstract becomes a review not an abstract.

7. Emphasize the title, then where there is no author there is no difficulty. Note the layout of *Copper abstracts*.

8. If abstracts are borrowed from other journals, acknowledgment must be made; if authors' summaries are used, then this should be indicated. The Royal Society has published two leaflets[17] on the preparation of synopses and abstracts, which may be obtained free.

Summarizing, then, this 'project paperwork' for trying to improve communication, I had ten points to make:

1. It should be useful, selective, challenging, slanted to known interests, attractively presented.

2. If a bulletin is issued it may include accessions lists and books should be annotated if possible. It can be varied with available translations, activities of professional associations, and other news. Style should be the duty of one

editor and a request form may usefully be added. Other types of material which could be put out—are:

3. Contents lists.
4. Theses lists.
5. PB reports.
6. HMSO Daily lists.
7. Annual circulation list of periodicals.
8. *Keys to information.*
9. Write-up of library facilities.

Point 10 concerned abstracts. Each information officer must make a decision on their desirability.

Much of the paperwork so far discussed I have imagined as being produced by typed stencil and rotary duplicator. It is worth while taking pains to produce good results. Three publications may be found useful in this connection.

1. *Stencil cutting*, by W. H. Hollis.[18]
2. *Typists' questions answered*, by K. Stevens.[19]
3. *Book of ideas*, published by Gestetner.[20]

Stencilling is undoubtedly the cheapest form of producing information paperwork and, since most concerns possess the equipment, a start can be made without additional outlay. If you can afford additional equipment the offset litho equipment now on the market produces very professional-looking work from typed stencil or photographed plates. Paper, when used for bulletins, information sheets, and such like material does not bear purchase tax, and can be bought in bulk and cut down. I do not propose to describe the many and varied types of copying and reproduction processes. The economics of print and near-print are a study in themselves. But as the use of simple photocopying apparatus is now so general, I may assume its availability for the use of some of the paperwork with which I am concerned this morning. Mr H. R. Verry's book, *Document copying and reproduction processes*,[21] is an exhaustive account and well worth the 52*s*. 6*d*. it costs.

The value of photocopying machines for reproducing small quantities of material cannot be overestimated. The fact that no checking is necessary saves much time, but the cost is far greater than it is for stencilling. It costs about 6*d*. for a quarto sheet and 8*d*. for a foolscap sheet, exclusive of labour by our machine, and, where copyright is not involved, we use it for single copies of papers, for up to six copies of leaflets and for all sorts of drawings, tables, charts, advertisements, and bibliographies. Contents lists may be photocopied, of course, but this method is expensive and, in any case, some journals do not make their lists of contents full enough to be worth copying as they stand. Such journals as *Flight* and *Aeroplane* must be hunted through for the useful and interesting items.

Microfilms, though we have acquired material in this form, are not popular. The small microfilm reader we have is adequate for its purpose and is easily portable, but most of our staff prefer the printed sheet. Together with many librarians, I have looked forward to the day when a microfilm reader would also be a printer, so that from material stored on films, microcards and microfiche, wanted portions could be printed at will. This day, I understand, has now arrived, and a well-known firm has now marketed just such a machine, which will produce you a printed sheet from the film you are reading in eight seconds dead.

Results of the issue of such paperwork as I have described have been noticeable, and the realization is growing that much material does and could emanate from the library. This has led to a fuller utilization of it. We find now that the issue of any piece of paperwork is not complete before the telephone starts ringing. Whether Mr Jones wants to be first on the list, or whether Mr Smith is intent on scoring off Mr Dupont, the indication that items are useful is nevertheless clear and strong. The issue of PB reports lists, mentioned earlier, has brought men into the library who previously had never used it. So a habit is being formed, and if our follow-up is quick, tactful, effective, confidence will grow and usefulness increase—'the information effort is long-term, cumulative'.

The pushing out of paper will not do all our work for us. A paper programme must be backed up with awareness of the customer's reaction, and of changes in the structure of the concern and in the emphasis of the work being done, a retentive memory for people and for their interests, enthusiasm and training throughout the library unit. Only in this way can the library service hope to hold a place with the committee, conference room, and laboratory towards the success of the concern it serves. Persistence is probably the chief necessity in this endeavour, and if the present effort to make the scientist and technologist information-conscious is nc easy task, we should not give up hope.

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PUNCHED CARDS IN THE LIBRARY AND INFORMATION FIELDS

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Electronic Group Conference, Ashridge, 29th to 31st May 1959

THE new industrial revolution in automation is being paralleled by a revolution in administration. One of the chief tools in this revolution is the punched card and today I am going to outline some of its uses in libraries in industry and in public libraries.

The know-how of using punched cards has two aspects. One of these is mechanical and involves learning how to punch, sort, and otherwise manipulate the cards. The other aspect is intellectual and concerns the necessity of analysing the subject matter to which punched cards are to be applied. It is my intention to talk chiefly about what is done rather than how—except for a brief introduction to the various types of punched card installations.

These installations are operated by hand manipulation, mechanical, electrical, or electronic means or by various combinations of these means. The hand manipulation system (of which Keysort is an example) requires no more complex tooling than a ticket collector's punch and a steel knitting needle. At the other end of the scale are giant computers like LEO handling many different types of material and dealing with a pay roll, accounts, and orders and still having time to spare. However, a basic punched card unit would use from two to four machines, namely a punch (either hand or automatic), a sorter, an interpolator, and a tabulator. The main manufacturers of this equipment are ICT (a combination of Hollerith and Powers-Samas), IBM and Remington-Rand, the last two operating more generally in the United States. The Powers equipment is mechanical or electronic-mechanical in operation, as is the case with the American equipment. The Hollerith machines are electrical or electronic.

A punched card allows the user to record a number of items (limited only by the size of the card and the amount of space required by each item) by punching holes in a prearranged code or system, these holes in turn being the means of sorting and interpreting the information recorded as required.

The first actual application of punched cards to library and information work for consideration is the ASM–SLA Classification. Formulated by a joint committee of the American Society for Metals and the Special Libraries Association, it was devised to solve the two main problems facing the technical researcher who has to make up a file of technical information. The first requirement is a logical and usable analysis of the subject matter in his particular field of interests. The second is the method of handling his files of information or literature reference.

This system has now been adopted by the Information Section of the British Iron and Steel Research Association and also by the equivalent organizations in Italy and Germany. For a report on the British adoption of the scheme I would refer you to the *Aslib proceedings* for November 1953[1].

Basically the classification allows for twenty main classes or divisions; each of these divisions can be broken down ten or twenty times, as can second and third divisions. And space has been left for a fourth division for specialists who want to take the classification further. In addition plenty of room has been left for expansion within the divisions themselves. The interesting thing is that this far-reaching classification can be accommodated on a standard 5 in. by 8 in. card manufactured by the E-Z Sort Company. This is one of the basic Keysort type of punched cards mentioned previously.

Claire Schultz[2] in the opening paragraphs of an article entitled 'An application of random codes for literature searching' had this to say: 'The first consideration of punched cards for library use made it clear that a change from conventional indexing to a punched card would be desirable only if the new system could provide all the functions of a standard index and also offer significant advantages'.

Miss Schultz is the librarian at the Merck, Sharp and Dohme Research Laboratories, where the problem is to index 15,000 articles a year in the biological, medical, and chemical sciences.

Using eighty column cards and an IBM statistical machine (a type of electronic sorter and tabulator) random coding is used for indexing chemical compounds and subject words describing a reference. All the information about an article including author, date, and source is punched on one card. Any combination of the items of information punched into the card can be examined in one pass through the machine.

To reduce the machine time, four different coloured cards are used. These denote: 1. human clinical papers, 2. veterinary clinical papers, 3. experimental papers in the field of biology, and 4. all others. These divisions are based on experience of the most representative inquiries received. Other than the colour divisions the cards are kept in no order, yet the maximum time for an average search is given as fifteen minutes for any one year's indexing.

You may wonder why random coding has been chosen for this system rather than the incorporation of an existing classification scheme. The answer is that with random coding no thought need be given to leaving room within the framework of the classification for new subjects. Basically it is the difference between a classified dictionary and a non-classified dictionary. For the classified dictionary, code numbers are usually assigned to emphasize logical relationships among entries. In a non-classified random dictionary the entries are mutually independent and the assigned codes are of equal weight.

This allows for searching under what would be a subdivision in a classified dictionary. To search for all the information in the file on 'toxicity' would be as simple as to search for all the information on 'pencillin', but in a classified dictionary 'toxicity' would be a subdivision of a great number of main headings.

An example of the classified system can be found at the Commonwealth Bureau of Plant Breeding and Genetics at Cambridge, where a coding system using UDC on 65-column Powers-Samas punched cards is recording all published articles on plant breeding and genetics. R. H. Richens[3] in an article on the system is critical of the UDC and discusses the merits and demerits of its use in mechanical coding. These points are very pertinent to any consideration of our subject and are well worth repeating.

On the credit side we have:

1. The UDC is very comprehensive, and a large proportion of the features of scientific papers that will require coding are to be found in it. Most organizations dealing with scientific information are interested primarily in the scientific aspect of their work, and not in logical principles of classification. For them, a ready-made classification, even though unsatisfactory on several scores, is likely to be of great service.
2. The UDC is extensible, and its subject headings may be subdivided indefinitely.
3. The UDC is internationally recognized.
4. The way in which UDC numbers are constructed lends itself to punched card techniques.

Against these the following disadvantages are listed. The points quoted here are applied to the particular problems of the scheme under consideration but I am quite sure that similar examples could be found in any portion of the classification.

1. It is not possible to draw together subjects which are placed far from each other in UDC, and to subdivide the logical sum of the two classes, e.g. cytology and genetics, as a single unit. This is a particular disadvantage in regard to the marked syncretic tendency of scientific studies. Subjects which once appeared remote from each other have now converged to such a degree that a discovery in any particular one is quite likely to be of significance to one or more of the others.
2. The same subject is likely to appear in more than one place in the UDC schedules. Thus, heredity is coded as 575.1 and 581.169, while hybridization is entered under 575.12 and 631.523. For purposes of mechanized coding, these double numbers have to be expurgated, and a choice made as to which alternative number in each case is to be used.

To cut down the number of cards for any machine procedure ten different colours are used numbered 1–9 and a plain card for general use. In all cases the determining of colour is done from the final digit of the crop decimal. Thus any paper on wheat which receives as one of its coding decimals the number 633.11 will have a number one card, which happens to be red. Similarly, papers on potatoes (633.491) would also receive a red card.

The type of inquiry which can be answered by one run through the sorter, it being possible to dispense with an initial sort owing to the predivision by colour, would be: 'What articles are there dealing with resistance to low-temperature wheat?' This inquiry could be made more specific and deal with a particular country and a particular date without additional machine work.

The Bureau is also able to provide an extra service to clients with specialized interests. A pilot card is made out for each client and punched with the coding equivalents of the subjects in which interest is expressed. Periodically the entire set of pilot cards is meshed with the subject cards acquired since the last operation. In this way each pilot card will appear after sorting at the head of a run of subject cards carrying the same punching and therefore dealing with the same subject. The details on these cards are then copied and sent to the interested client. The Bureau has also found that the punched card sequence helps to cut down the work in compiling the annual subject index for their abstract journal.

We have seen, I hope, that punched cards are a convenient tool for the recording of index entries to books and periodicals and for the finding of references to pertinent documents in answer to given questions. These tools can also be applied to other tasks, such as the many clerical and technical routines necessary in the functions of a library.

A great many American libraries, university, public and special, use punched cards in their ordering and cataloguing routines. The Montclair Library in New Jersey punches in information showing, besides author and title, the classification, age group or sectional interests, language of the work, literary form and so on, and these items are collated with issue statistics for the formation of purchase and discard policy.

Several County systems in the States use punched card systems for cataloguing. This is because of the constantly changing book stock at numerous branches and allows for the quick and easy tabulation of loose leaf catalogues and eliminates the time-consuming task of removing cards from a main catalogue and adding new ones. King County in Seattle changes stock every six weeks and is able to produce a catalogue with each change.

The Library of Congress produces a continuing supplement to the *Union list of serials* from punched cards and an interesting project is going forward in Italy, where a national union catalogue is being prepared by means of punched cards.

Finally we come to issue systems. Perhaps some slight consideration should be given to the requirements of an issue system. For many years in England the Browne system was considered to give the main information required by any administration, namely, what book is out to what reader and when is it due for return. Unfortunately this system takes up a lot of space, is slow to operate, prone to error, and once an error is made it will snowball unless immediate action is taken. One wrong ticket given out will at once give four errors, as two books and two readers will be involved.

The first effort to break away from Browne was made by the introduction of Photo-charging. This statement needs some qualification, as historically Token charging precedes Photo and in the United States Dickman and Newark had been used a great deal. However, token charging was introduced at Westminster to deal with a specific local problem and was not considered to be a system for universal use, and Dickman and Newark had few followers in this country. Photo-charging breaks from tradition in that whilst it controls the reader it does not control the book stock. The issue record is contained on a strip of film in no other order than that in which the books are issued, and it is not possible to check whether a book is actually on loan or on what date any particular book is due for return. Reservations can only be done by placing all reserve cards on a visible index and hoping the book is on loan.

After some predetermined period all outstanding cards must be reconsidered, and even though the book concerned may still be in circulation some action may need to be taken involving possible purchase of a new copy or borrowing a copy through an already overloaded interlibrary loan system.

Now Photo-charging caused a considerable speed-up in counter service particularly on the discharge where, when returning books, a reader does not have to wait for a ticket and the assistant only has to check the due date before removing the transaction card. However, much of the staff time gained at the service point can be lost in the sorting of transaction cards which is necessary before overdue notices are sent out. For this reason many libraries using the system use punched transaction cards either for hand or machine sorting. the best example of the machine sorting systems being at Croydon, where it is known as Photo-punch charging[4].

When we considered the possibility of a new charging system at Holborn what we looked for was something that gave us the advantages of photo allied with the advantages of Browne. It was felt the retention of control of the book stock was an important item and it was for that reason that it was decided to experiment with a pure punched card method.

The problem at Holborn is that two libraries of very nearly the same size, both in book stock and issue, are dealing with a night-time population of 23,000 which by day swells to an estimated quarter of a million. A good proportion of our readers use the library during their lunch time, which results in something like 50 per cent. of any one day's issue being done between twelve and two. Conditions on the counter became chaotic during this period, and all available staff were needed to man the issue and no one was available to assist readers who largely had to fend for themselves. A further problem loomed ahead with the building of our new central library. It is our experience in Holborn that every time we have offered improvements in the service they have been fully utilized in a very short time, and it seemed likely if we stuck to Browne the situation would become impossible.

The equipment that is in use at Holborn is Powers-Samas '40'. The libraries could have functioned on twenty-one columns, but by using the larger card we are able to share some of the equipment with our Borough Treasurer's department. In each lending department we have two automatic key punches which, in view of our experience, were especially adapted to our needs during the experimental period. What we have done is to turn the machine around and put the keyboard at the back, so that the operator sits just by the side of the card ejector and does not have to lean forward and round to collect the transaction card to put in the book. Also incorporated is a dating device which stamps the date in clear. With the size of issue we do it would have been possible to use one machine only at each issue point if we did not have to deal with a peak period. But the second machine (which is probably used only an hour a day) prevents any bottle-neck at the issue side and allows for breakdowns, training, and routine work to do with permanent loans and so on.

In the Borough Treasurer's department, where the issue is stored and all the machine work is done, there are three other machines. A high-speed sorter which sorts cards at a speed of 40,000 an hour. An interpolator, which is a machine that either compares cards, bringing like cards together and rejecting unlike, or merges cards, both operations at a speed of 12,000 cards an hour. The final machine is a tabulator which reproduces the punched holes in plain language, and is used to give us an overdue list. It is used for about half an hour a week by the Libraries department.

The cards used at Holborn are divided into two fields. The libraries department could use 21-column machinery but a 40-column sorter and interpolator can be shared with the Borough Treasurer's department, making running costs more economic. To ensure there is no confusion Field 1 is used at the East Holborn Library and Field 2 by the Central. On the back of the cards the date due is stamped in clear, black for East Holborn and red for Central. This is a staff check that books are being returned to the right library. Twenty columns of information are used by each library in the following manner. Columns 1 to 3 are not used for issue purposes, but all returned cards have the date of return punched in that position; this is to ensure that in handling issues and returns are not confused. Columns 4 to 9 show the day, month and week of the year due for return. This permanent information only requires setting up at the beginning of the day. Column 10 is used for the Dewey main class symbol, and it is on this column cards are initially sorted and counted by the sorter for statistical purposes. Columns 11 to 15 record the individual accession number within the class, and columns 16 to 20 the reader's number. Each reader has a plastic laminated ticket bearing his number and name which must be produced each time a book is borrowed.

The method of issue is this. The borrower brings the book to the AKP and shows his ticket. The operator depresses the necessary keys to punch *a.* the accession number and *b.* the reader's number. This only sets up the information in the machine and if a mistake has been made it can be cleared by returning the carriage to zero as one would push a typewriter carriage along. The operator now depresses the punch key which produces two identical cards, one of which is placed in the book with the date in clear showing and the other retained as the issue record. A clearing key is now depressed to eliminate the book number; the reader's number can be held until all his books have been issued, when a second lever is depressed to clear the machine. In a time test taken under normal conditions in a busy period sixty-eight books were issued in five minutes.

At the end of the day the issue is collected together and taken to the Town Hall. The first procedure here is to place it in the sorter and sort over column 10 to sort into class. Each class is then sorted into accession order and counted. For an issue of 1,500 this would take about twenty minutes. The interpolator is now used. At one end the aggregate issue is placed and in the other the new issue. The interpolator is set to merge, which it does by sensing the bottom card of each pack and selecting the lowest one which it passes through. We have about 12,000 books out on loan from each library, so this operation takes about one hour.

Now to the return of books. When a reader returns a book the procedure is the same as in Photo-charging—that is, the assistant checks the date due and removes the card and the borrower passes through. The cards are placed in one of two return boxes, one for current loans and the other for overdue books where an overdue notice has been set out. The overdue cards are dealt with by hand and I will deal with that aspect later. The current cards are collected at the end of the day, the day's date is set up on permanent gang punch over columns 1–3 and the cards put through the machine. There is an automatic punch position which allows the operator to carry on with other work except when the hopper requires refilling. The cards then go to the Treasurer's department, where they are sorted in the same way as the issue. They are then placed in the interpolator opposite the aggregate issue and the interpolator is set to match up identical cards and reject unlike. At the end of the run we are left with two piles of cards, one being the twin issue and return cards and the other the outstanding issue. The time for this operation is the same as for sorting the issue. The overall time is not, however, double that taken for any one procedure, as it is possible for one operator to use two machines so that the actual time taken for an issue of 1,500 is about 2½ hours. During this period the operator is also checking manually a reservation list, a renewal list, and any queries which may have arisen as a result of lost transaction cards.

Overdue notices are sent for all books two weeks overdue. The relevant weeks' outstanding loans are extracted by the sorter, put in reader order and tabulated, which produces a list in clear. As overdues are returned they are crossed off the list manually, since machining of such a small number of cards would be uneconomic.

As in Photo-charging, reservations, except for books on waiting lists which have a special sticker, are mounted on a visible index. There is, however, one important difference: it is possible to check the aggregate issue and the overdue tabulations to ensure that a book is on loan, and then in answer to readers' inquiries to inform them of the date a book is due for return.

Renewals without producing the book are not a great problem. A note is made of the accession number and reader's number on a list. The title is checked against the visible index and, if not reserved, the reader is given the new date due which he is asked to make on the transaction card. The next day the list is checked against the aggregate issue—the original issue removed and a new card inserted giving the new date due.

There are three main snags with this system. *a*. Loss of transaction cards; this is not really a worry, as we know the accession number and we can get the reader's number and so remove the loan record by hand. Unfortunately during the rush hours it is not always noticed that a card is missing and books for this reason are sometimes not discharged, resulting in an incorrect overdue notice. *b*. Incorrect punching—again not a great trouble. We issue about 8,000 books a week and usually by overdue time we get two or three errors coming to light. *c*. Operating skill—anyone can operate an AKP after five minutes' tuition but it takes some practice to work up speed; for this reason we employ a trained operator who is always on duty during peak periods.

There are two other punched cards systems for book-issuing in use in the world to my knowledge, and in these systems one is designed to eliminate incorrect punching, punching too few or too many cards and specialized operating skill. The other partly eliminates incorrect punching and completely eliminates punching too few or too many cards.

This second system is at Christchurch, N.Z., and uses Powers 21-column equipment. The AKP here has a reproducing device fitted and is set always to punch two cards. The reader carries a punched ticket which is inserted in this device and his number is reproduced automatically, leaving only the accession number to be punched manually. There are two reasons why we did not adopt this method. Firstly the operation of issue is slower and secondly the ticket has to be on card and would require frequent replacement. Experiments using plastic card are in progress and I understand that ICT expect some success in this field very shortly.

The first system is in use at the Montclair Library in New Jersey, which operates a punched card system for all library routines. Here they are using IBM '80' column machines and on the issue desk reproducers instead of AKPs. Each book contains a master punched card and each reader has a punched reader's ticket. The two cards are fed into the reproducer and the information on them is transferred to the issue record. This is a most complex system, as they record everything you can think of. You may remember that earlier I mentioned the order card which gave author, title, class, number, language and so on, and this information is also punched on the book card. The reader's card contains just as much information, as in addition to the name and address it has telephone number, educational standard, occupation, maritial status, age, and special subject interests. When the book is returned the issue cards are kept and then sorted in various way to help in book selection and discard. One can imagine them being used as a basis for a statistician's nightmare as well.

I have tried to make this a factual paper in order to show you that actual applications of punched cards to library and information work are here, and are working successfully, and are not just a hopeful dream for the future. Technological advance makes me believe that there is a big future for systems of the sort I have described. However, I would close with a word of warning—always remember the 'significant advantages' phrase used by Claire Schultz and spend a lot of time considering all the pros and cons before embarking on any scheme of mechanization.

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PROGRESS IN REVISION OF THE UDC 621.3 TABLES*

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ALTHOUGH this talk is to be devoted to the Electrical Engineering section 621.3 of the Universal Decimal Classification as a whole, in view of your primary interest in the field of electronics, I shall try to place, where possible, more emphasis on this aspect of the subject. I am assuming that the general structure and method of using the UDC will be familiar to the majority of you, so I shall not elaborate upon this.

The current edition in the English language of the UDC tables for 621.3 is BS1000A (vol. 4, part 11) which was published in July 1946. It is largely the result of the work of a British Standards Institution Committee, which met regularly during the war years under the chairmanship of the late Dr J. A. Wilcken to translate and prepare for press an English version of the German 1936–8 edition. The terminology of this first English edition is based wherever possible upon the BSI standard glossaries of Electrical Engineering and Telecommunication.

Although it was realized already in 1946 that the tables as then published were badly in need of revision, it was felt that the body of potential users would best be served by providing them there and then with an authoritative standard, but that the work of revising it should begin without further delay.

Thus it was that the wartime committee came to be reborn in the shape of Panel OC/20/4/5, with as its parent body the British Standards Committee OC/20/4, concerned with the UDC in general. OC/20/4 is itself a subordinate committee to Documentation Standards Committee OC/20, which handles all aspects of bibliographical standardization on a broad front.† Dr Wilcken again became Chairman of the Panel, and I think it would be fitting here to pay a short tribute to him, for it is to his interest, enthusiasm and firm guidance that the success of the Panel's work has been so largely due. As early as 1942, while Editor of *Science abstracts,* he had secured the adoption of the UDC for its classification in the face of considerable short-sighted opposition, and since then, in the Electrical Engineering field alone, some 70,000 abstracts have been classified and indexed by this means.

The Panel comprises members from the electrical industry and government research establishments, the interests of all branches of electrical engineering being well represented. Four of the original members continue to serve on the Panel, having regularly attended no less than 130 meetings. In revising many of the sections where a more specialized knowledge has been required, the Panel has made a practice of inviting the assistance of expert advisers, mainly from industrial firms, who in every case have been very willing to provide such help.

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* Slightly abridged version.

† G. A. LLOYD. A decade of standardizing in documentation. *Journal of Documentation,* vol. 15, no. 4, December 1959, pp. 208–25.

ORGANIZATION OF WORK

Before considering the task of revising the tables, a brief digression on the official procedure by which new numbers and concepts are introduced into the UDC may be of help. The ultimate controlling body for the UDC is the International Federation of Documentation (FID) with headquarters in The Hague, with whose authorization the various national (or language) editions of the UDC are published. Proposals for revision or extension of the tables are conveyed to the FID by the national representative body—in our case, the British Standards Institution—although there is no rule to prevent their submission by independent organizations or even private individuals. The FID secretariat, after inspecting new proposals and submitting them to its own international committee on a given subject, where such a committee exists, then publishes the proposals in the form of a PE-note* (Projet d'extension). These PE-notes are obtainable by direct subscription from the FID and embrace the whole range of the tables. A period of four months is allowed from the date of publication of a PE, during which objections to any given proposal it contains may be entered. If no objections are received within this period, the new proposal is considered as accepted and is therefore available for inclusion in the definitive publication, appearing in January and July each year, and entitled *Extensions and corrections to the UDC*. These *Extensions* can also be obtained by subscription, and are subsequently used as a basis for preparation of new editions of the tables proper.

Our Panel's initial task was therefore a twofold one: first to proceed steadily through BS1000, scrutinizing each section in turn in order to suggest modifications, extensions or deletions in the existing text. All such recommendations were to be put forward as British PE's. Secondly we saw it our duty to study all new PE's published in the 621.3 section and in other subjects with direct bearing upon electrical engineering, so that we could, if we thought fit, enter objections, submitting at the same time an alternative proposal to the FID.

This procedure proved satisfactory for the first year or so, during which time the work consisted mainly in tidying, and in removing inconsistencies and anomalies, but no very far-reaching changes were made. To effect really substantial improvements, it became increasingly clear to us that more radical changes were necessary which would involve actual cancellation of groups of numbers and reclassifying the subject matter they covered under new numbers, either because more room for development was needed or the existing breakdown was unsatisfactory. But throughout our work, such sweeping changes have always been a last resort, so as to avoid, as far as possible, upsetting existing files and inconveniencing their users. In September 1947 we established contact with a sister committee in Holland, which had recently been set up with broadly the same aims as ourselves. We have in fact enjoyed friendly collaboration with this Dutch committee ever since, many of the major changes carried out being the result of Anglo-Dutch efforts. In 1948, at a General Conference of the FID at The Hague, an international committee for 621.3 (FID/C 621.3) was formed with the title 'International Classification Commission for Electrical Engineering (ICCEE)', Mr Eco Moulijn, the secretary of the Dutch national 621.3 committee, being appointed the first secretary of the international committee, which office he still holds. The purpose of the ICCEE was to co-ordinate the activities of the various national committees, to prevent unnecessary duplication of work, to act as a general clearing house for information on 621.3, and to maintain relations with committees working on other parts of the UDC. Since 1948 national committees for 621.3 have been established in Switzerland, Denmark, Japan, Germany, and Australia, while Jugoslavia, Austria, Sweden, Spain, Italy, Czechoslovakia, and New Zealand have all shown interest in the work. With the creation of FID/C621.3, the general procedure with new proposals was modified. Whether worked out independently or in collaboration with other committees, all our major schemes for revision were thereafter routed to the FID via Mr Moulijn, who circulates them as an 'international document' to the members of FID/C621.3. These documents are then finally discussed at meetings of this committee which have coincided with Conferences of the FID, and have been held with few exceptions annually since 1951. Advantages of this apparently rather cumbersome procedure are first that such international gatherings provide an opportunity of resolving outstanding controversial points which have proved difficult to settle by correspondence, and secondly that documents subsequently published as PE's with the blessing of a representative and authoritative international body are less likely to meet opposition from other interested PE-note subscribers. So much for the organization and administration side. A new edition of BS1000, volume 4, part II, will form part of a complete new English edition of 620/621 to be published in the near future. The 621.3 tables, in particular, will contain many improvements and extensions in the groups dealing with electrical power engineering, for example, substations, transformers, resistors, magnetic materials, relays, and transductors. The sections in which the most radical changes have been introduced are, however, those concerned with lamps, electronics, and telecommunications, and these three I should like now to consider, giving some background information on how and why they were conceived.

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* Now known as P-Notes.

PROGRESS ACHIEVED

621.32 *Lamps.* The existing tables contain a welter of detail relating to the manufacture of incandescent lamps, misguidedly included when this section was compiled. We find there, for example, 621.326.61 'bulbs', .611 'removal of the excess glass', 621.326.63 'cement', .631/.632 'manufacture and composition of the cement'. These are glaring examples of the situation which arises when too exhaustive classification is attempted. If such minute detail is required, and this is perhaps questionable, we have, in the first instance quoted, a clear case for the use of the auxiliary subdivision .032 which may be attached to the number for any other type of lamp or indeed to that of a thermionic valve in 621.385. In the second case, correct UDC usage would require the use of colon combination to the appropriate number for cement in the 666 group. To remedy the unsatisfactory state in 621.32, our Panel together with the Dutch committee have therefore cancelled large portions of 621.326, developed new places under 621.327, and expanded considerably the relevant auxiliary subdivisions of .032.

621.37. *Technique of electric waves, electromagnetic waves, etc.* This is an entirely new section, the main subdivisions of which should be familiar to you as they were published in the 1957 abridged English edition of the UDC. It was realized at the outset that the main divisions of the telecommunications section: 621.394 telegraphy, 621.395 telephony, 621.396 radiocommunication, and 621.397 television, so arranged in chronological sequence of their development, offered no satisfactory home for any disembodied piece of electronic equipment, such as is used at the present day in countless applications outside the field of telecommunications. We found, for example, that the valve amplifier (or electronic amplifier) was allocated a general number 621.394.645, this being a subdivision of the somewhat archaic 'magnifiers and amplifiers' section in telegraphy, with parallel subdivisions to cover the cases of amplifiers when used in telephony, radiocommunication, and television. This was an unhappy state of affairs. Who would wish to classify, say, an amplifier used in studying the mechanism of hearing of a whale under 'telegraphy by wire : whales'? We debated at considerable length whether the hitherto unused division 621.393 might be developed for electronic techniques and equipment, for, to be fair, telecommunication was the original and still remains the principal field in which such equipment is used, but the majority of opinion favoured the opening up of 621.37, likewise so far vacant, for electronic techniques and apparatus with applications not limited to telecommunications. A subsidiary advantage in choosing 621.37 was that it was separated from 621.39 by the kindred group 621.38 covering electronic tubes. This new section therefore absorbed all the existing subdivisions for oscillators, modulators and amplifiers throughout 621.39, taking in also the contents of section 621.392 (theory of telecommunication lines, waveguides, etc.) which in the new arrangement became 621.372. All these concepts were expanded and brought up to date when 621.37 was officially adopted in 1955. The old subdivisions were, of course, simultaneously cancelled. This we trust has been a major improvement and so far has stood the test of practical application.

621.38 *Electronics. Thermionic tubes, etc.* The need for radical revision of this section did not appear so acute in 1946, as it was not until 1948 that the transistor made its hesitant début to enter seriously on the scene only after 1951, nor, despite the great strides made in VHF techniques as a result of radar research, was the volume of literature or the number of types of valve so large as to render the existing subdivisions inadequate.

Thus it has been only in fairly recent times that a new group 621.382 entitled 'solid-state devices' has been prepared. This work has been subject to regrettable delays, but is due for publication in the next edition of the *Extensions and corrections*. It will cater for crystal diodes and transistors in all their variants, and will leave ample space for future developments. Another entirely new section, 621.385.6, appeared in the January 1959 issue of the *Extensions* covering all forms of microwave tubes, including magnetrons, klystrons, travelling-wave tubes, and so on. Other extensions to be published shortly as PE-notes will deal with photocells 621.383, classical types of hard valve 621.385.1/5, cathode-ray and other electron-beam devices 621.385.8, and lastly gas-discharge tubes (other than for lighting) 621.387, which include thyratrons. A complete overhaul of 621.384.6, particle accelerators, is being undertaken through the joint efforts of Harwell and the CERN organization in Geneva.

621.39 *Telecommunications.* As already pointed out, the framework of 621.39 as it stood in 1946 was open to criticism on many grounds, but even today, disregarding the enormous volume of literature already classified by means of its subdivisions, the rough separation into telegraphy, telephony, etc., is still applicable to much of current publication. Whereas the Dutch 621.3 committee, who were also very conscious of the defects of the 621.39 arrangement, had already in 1949 drawn up a radical scheme for recasting of the whole of telecommunication on a more logical and scientific basis under the heading of 'electrical information technique', probably involving the eventual abandonment of 621.39, the British Panel has continued to favour a more conservative approach, taking the view that a gradual, piecemeal revision of each main section would best serve the user's needs. In any case, the limited time at the Panel's disposal precluded any profound study of a revolutionary scheme such as the Dutch proposed. We have therefore devoted our efforts more towards the weeding and patching of 621.39 as it stands. The present state of the revision work may be summarized as follows:

621.391 *General.* The existing subdivisions remain, but a comprehensive set of new numbers under 621.391,7/8 have now been published in the August 1959 edition of the *Extensions and corrections.* They cover all aspects of the quality of signals, interference problems and the like, at present appearing four times under the eight subdivisions of the various main forms of telecommunication, and these numbers are simultaneously cancelled.

621.394 *Telegraphy.* This has been thoroughly revised by ourselves in collaboration with the Dutch committee, and although a long time has elapsed in settling some disputed points of detail, publication of a new definitive scheme is now in sight.

621.395 *Telephony.* This section has been revised as far as 621.395.38, modernizing the divisions for private exchanges and providing a place for subjects of current importance such as traffic studies, electronic switching, and so on. Work on later sections is proceeding somewhat slowly, experts in Sweden and Germany collaborating. A subject at present included for historical reasons under 621.395 is magnetic recording, where it forms a subdivision of 'recording receivers' 621.395.625. This anomaly is in urgent need of attention.

621.396 *Radiocommunication.* Propagation phenomena at present under 621.396.11 will be taken care of under the new group 621.371 mentioned earlier. A thorough revision of aerials 621.396.67 was undertaken in 1951 and about the same time a new subdivision 621.396.96 was added for radar. A new group under 621.396.9, dealing with navigation by radio methods, is also being worked out by the Australian UDC committee in New South Wales, and our Panel is collaborating in this task. Otherwise little has been done in this section apart from effecting the cancellations made necessary by the introduction of 621.37. There is now a real need for a re-examination of the remaining contents of the subdivisions 621.396.61/.66.

621.397 *Television.* A complete revision was carried out during 1953–7 and has now appeared in the August 1959 edition of the *Extensions and corrections.*

621.398 *Telecontrol.* This section is not subdivided and no changes in it have so far been proposed. Since 1957 a BSI Panel has been in existence for the study of the classification of control, calculating machines, data processing, and similar subjects, and our own Panel maintains close liaison with it.

Section 621.3 *and its users*

The Electrical Engineering section is one of the most widely used of the UDC tables, and, as far as English-speaking users are concerned, there are two main reasons for this: 1. the existence of an authoritative standard (English) schedule and 2. a continued revision of the tables to keep in step with advances in science and industry. Preparatory to the publication by the FID of a *World list of UDC users*, the BSI has compiled a draft list of users in the United Kingdom, classifying them according to whether they use the UDC for arrangement, filing of unbound material, papers, etc., for books and bound volumes, for cataloguing, or for reports, abstracts, or articles. Of a total of some 650 known users, about ninety make use of the 621.3 divisions for one or more of the purposes mentioned. However, the real number of users in this country probably runs into several thousands, this being estimated from the sales figures of BS1000A, vol. 4, part 11. Another important field where the use of the 621.3 subdivisions is widespread is in the published classification of articles in electrical engineering journals. In this country, only the *Proceedings of the IEE,* the *Journal of the Post Office Electrical Engineers,* the *Journal of the Brit. IRE* and *British telecommunications and electronics* follow this useful practice, but a survey made in 1955 and now being brought up to date shows that there are as many as ninety-five electrical periodicals in twenty-eight countries throughout the world which make regular use of the UDC. This figure does not of course include foreign abstracting journals covering the electrical field, many of which use the UDC to greater or lesser extent. A subsidiary advantage of a published classification, which is sometimes overlooked, is that the attachment of a UDC number to an article written in an unfamiliar language—eastern European countries often being helpful in this respect—gives a clue to the general content of the article and often may save recourse to a dictionary.

I hope that I have succeeded in showing that an encouraging measure of progress has been achieved during the past twelve years in making the UDC a more valuable and adaptable tool for the use of all concerned with the literature of electrical engineering. This has been possible largely through the efforts of small groups of enthusiastic users in a number of European countries. With the present rate of engineering development, accompanied by a steadily increasing volume of technical publication, there seems every indication, however, that their work will need to continue for some considerable time to come.

ASLIB EXHIBITION OF PHOTOCOPYING EQUIPMENT

G. M. PATERSON, BA, ALA
Librarian, Aslib

This exhibition was held at Aslib from 1st September to 30th November 1959 and was attended by approximately 150 individual visitors from 100 organizations, forming a representative cross-section of Aslib's membership. Some visitors were clearly disappointed at finding only a small number of machines on display, all of which used basically the same process, i.e. diffusion transfer. The machines had been chosen on the strength of their ability to copy from bound volumes as well as single sheets, and this principle of selection more or less determined the nature of the process involved.

The following remarks on the machines exhibited are presented in the hope that they may be of interest both to those who were able and those who were unable to visit the exhibition. It must be emphasized that they are solely the impressions gathered over a period of three months by the author and other members of the Aslib staff, none of whom is exceptionally skilled or knowledgable in the field of document reproduction, and do *not* represent the conclusions of a detailed scientific investigation of the machines.

ANSON

Agent

George Anson & Co. Ltd, Solway House, 75 Southwark Street, London S.E.1.

Price

E–B. 40 folio (Electrically operated development) £84 10*s*.
H–B. 40 folio (Hand-operated development) £62 10*s*.
E–B. 40 brief (Electrically operated development) £97 10*s*.
H–B. 40 brief (Hand-operated development) £76 10*s*.

Paper

Gevaert medium.

Quality of print

Good; dark brown rather than black. Three sharp positives were obtained from one negative.

Book-copying ability

Front edge of glass exposure plate bled over and bevelled at angle of 45°. A bridge with a clamp (price £10 15*s*.) is available for exerting pressure on book placed face down on exposure plate. Only one page at a time can be satisfactorily copied. Not entirely successful with an 'awkward' book, i.e. a book with a tight binding and a narrow inner margin.

General remarks

A compact little machine, with exposure and developing facilities combined in one unit. Good results were consistently obtained. Developing unit easy to dismantle and clean.

BANDAVELOP

Agent

Block & Anderson Ltd, Banda House, Cambridge Grove, Hammersmith, London W.6.

Price

Brief size, £150. Folio size, £115.

Paper

Agfa slow.

Quality of print

Very good; even quality at edges of brief size copies.

Book-copying ability

Front edge of glass exposure plate bled over at 90°. Lid of the machine can be raised on expanding hinges at back, like Revelation suitcase, and side clamps can be adjusted accordingly, thus allowing books to be firmly held in position face downwards against the exposure plate. Not entirely successful with an 'awkward' book.

General remarks

Compact machine with exposure and developing facilities combined in one unit. Compartments at side for storing paper. On the brief size, it is a little awkward to reach the back hinges to adjust them. The whole procedure of adjusting back hinges and side clamps to the thickness of the material being copied is rather time-consuming; it can be overcome by simply using hand pressure but this is liable to produce an uneven print. Developing unit of good quality and design, easy to dismantle and clean. Even for brief size, the price is high in comparison with other similar machines.

CONTOURA

Agent

Contoura Photocopying Ltd, 52A Cromwell Road, London S.W.7.

Price

Quarto, £38. Foolscap, £50. Double-foolscap, £70.

Paper

Gevaert medium.

Quality of print

Very good.

Book-copying ability

Better than the other machines in this respect. Found to be the most successful machine for copying from an 'awkward' book. For best results, the book is placed on the table beside the machine, the exposure box, with slightly inflated air cushion attached to it, is removed from the carrying case and placed face down on the opening of the book. A perspex rod placed on top of the negative paper up the centre of the book with the weight of the exposure box on it, allows good contact however narrow the inner margins. The only machine which permits successful copying from an opening, i.e. two facing pages.

General remarks

Has the virtue of cheapness allied to efficiency. Easily portable. Developing unit separate and hand-operated, requiring some care in placing of negative and positive sheets and in slow, regular turning of handle; but a motor attachment is available if required. Copying of single sheets perhaps fractionally slower than on the other machines, but this is offset by its greater efficiency in copying from books and periodicals.

DOKUPHOT

Agent

E. G. Solomon, 44 Worship Street, London E.C.2.

Price

Model demonstrated (prints up to 13 in. by 17 in.), £85. Other models from £65 to £143.

Paper

Gevaert normal.

Quality of print

Good, but not always as sharp as those from other machines. This is due to the light source being weaker and a faster paper being used. Better prints obtained with medium paper, but then exposure of 30 seconds is necessary.

Book-copying ability

Side edge of glass exposure plate bled over at 90°. Lid of the machine not adjustable; pressure against the glass obtained either by hand pressure or use of heavy weight (e.g. marble slabs as supplied) on top of book. Method is crude but successful with most material, and certainly quicker than the more sophisticated methods employing adjustable clamps and hinges.

General remarks

A reasonably efficient machine which is easy to operate. Separate developing unit, hand operated, requires care in operating as it is light and liable to tip over if too much vigour is used. Price of the machine is rather high for what it is, particularly the developing unit which accounts for nearly half the total cost.

UNICOP

Agent

Ozalid Co. Ltd, Langston Road, Loughton, Essex.

Price

Foolscap unit, £32 10*s*. Double-foolscap unit, £50.
8 in. hand-operated developing unit, £32 10*s*.
8 in. electrically operated developing unit, £62 10*s*.
13 in. hand-operated developing unit, £42 10*s*.
13 in. electrically operated developing unit, £78.

Paper

Agfa slow.

Quality of print

Very good.

Book-copying ability

Precisely the same arrangement as on the Bandavelop machines (both machines are manufactured by the same firm, Develop, of Stuttgart).

General remarks

A neat machine of pleasing appearance. The developing unit being separate means that more operating space is required than with a machine where exposure and developing are combined in one unit, but there is no appreciable difference in the total time for exposure and development.

ALL MACHINES

Developing fluids

No difficulty was experienced in the mixing of developing fluids, the usual procedure being to mix the prepared solution with an equal quantity of water. Developing tanks were easily filled and emptied by a simple syphoning technique. The developing units in all machines were easy to dismantle and clean—ten to fifteen minutes were sufficient to empty, clean, and refill a unit. The developing fluid required replacing approximately once a fortnight, depending on the use made of the machine. Ideally, the fluid should be drained into a polythene container every evening.

Copying of different types of original

All the machines were capable of copying any type of original, whether printed, typewritten, pencilled, etc. No machine was very successful with half-tone reproductions or coloured originals. Some (expensive) trial and error was usually required in adjusting the exposure meter to obtain a good print from a page containing text, diagram, and half-tone reproduction. The quality and colour of the paper of the original also determined the exposure time, and some practice was necessary to develop an accurate judgment in this respect.

Number of copies

The transfer process is essentially a one-copy-per-negative process, since the negatives have no permanence. However, it was found that two copies could normally be obtained from a negative by applying a second piece of positive paper to the negative immediately the first positive had been peeled off. At the time the machines were delivered in August 1959, it was anticipated that a new multi-negative paper would shortly be available, which would enable twelve to fifteen positive prints to be taken from a single negative. Since the exhibition closed, Gevaert has brought such a paper on the market, at a cost approximately 75 per cent greater than the existing negative paper. Agfa will shortly be introducing a different solution to the problem of multiple copies: a multi-copy positive paper which will enable six to eight positive copies to be taken from the existing negative paper, with no increase in price anticipated for the new positive paper.

Where the number of copies required exceeds fifteen, the advantages of dyeline copying need to be considered. All the machines displayed were capable of producing positive transparencies for use as dyeline masters.

CONCLUSION

Several lessons have been learned from this first exhibition which should prove useful for future exhibitions. In the first place, three months was probably too long a period for an exhibition of this nature; the interest of Aslib members and Aslib staff would probably maintain a greater intensity and freshness if the period were shortened. Secondly, it will be necessary in future to give more detailed information about the exhibition in advance, to avoid unnecessary frustration and irritation to members who 'travel hopefully' but find nothing that was previously unknown to them. Thirdly, more attention might well be paid to the labelling of exhibits and the display of printed information; this was not done to any extent with the photocopying machines since it was anticipated that Aslib staff would always be present to give the required information.

It is felt that this exhibition was reasonably successful and was helpful to those who came with the intention of purchasing a machine in the near future. It might well prove desirable to hold a further exhibition on the same topic, with the emphasis changed to the variety of photocopying processes and more attention given to offset-litho and dyeline copying.

Aslib acknowledges with gratitude the co-operation of the manufacturers and agents who lent the machines as well as a free and liberal supply of paper and developing fluid. The suppliers of the 'Contoura' and 'Dokuphot' machines have kindly offered to leave their machines on indefinite loan to Aslib for demonstration to interested visitors and it is hoped that another of the smaller machines—either 'Anson' (also marketed under the name of 'Skycopy') or 'Unicop'—may be retained. All the machines were felt to give good results, and a choice of machines would in many cases be determined purely by price consideration.

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ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

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RUSTON & HORNSBY LTD require a LIBRARIAN/INFORMATION OFFICER to set up and develop a special library service for its Engineering, Scientific, and Works staff. Applicants should be chartered librarians between the ages of 30 and 45 with a wide experience of technical library work and capable of answering specific technical inquiries. Post pensionable. Interview can be arranged in London or Lincoln. Applications to Staff Manager, Ruston & Hornsby Ltd, Lincoln.

SENIOR LIBRARY ASSISTANT, male or female, required by firm of consulting engineers interested in all aspects of engineering, building and architecture. The library is small but rapidly expanding and, in addition to books, pamphlets, and journals, contains lantern slides, photographs, and trade literature. Duties will include cataloguing and classifying and reference work. Applicants should have all parts of the registration examination of the Library Association. Experience in a special library is desirable. Salary according to experience and qualifications. Please write, giving full details, to OVE ARUP & PARTNERS, 8 Fitzroy Street, London W.1.

TECHNICAL READER OF INQUIRY ENGINEER required in the Library and Information Department of a large midland group of industrial companies, to study technical literature in the production engineering field, to advise executives, and to handle investigations on particular inquiries. Emphasis is placed on knowledge of production engineering, machine and press tools, and welding techniques. Some working knowledge of foreign languages is desirable. Good opportunities for future advancement depending largely on initiative and ability of person selected. Salary according to qualifications, experience, and potentiality. Minimum £900 to £1,000 per annum. Superannuation scheme, canteen, and social amenities. Write giving details of qualifications and experience and personal details to Personnel Manager, RUBERY OWEN AND CO. LTD, P.O. Box no. 10, Darlaston, Wednesbury, Staffs.

Wanted

Proceedings of the British Society for International Bibliography, vol. 7, parts 3 and 4. Aslib, 3 Belgrave Square, London, S.W.1.

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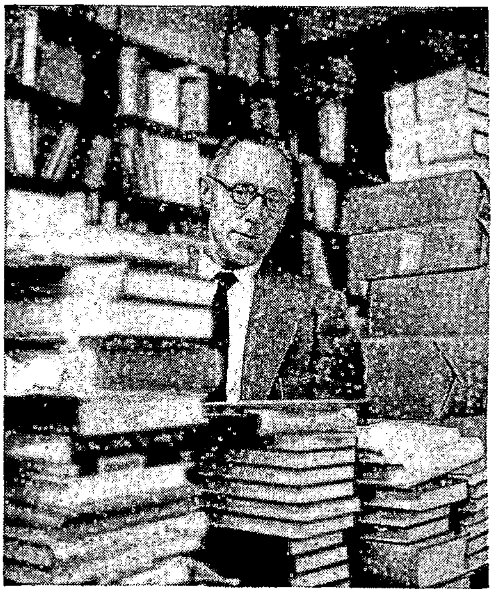

Mr. S. A. Loughborough runs our despatch department. He says that he has no Christian name—never has had—and has been known as 'Luffy' ever since he came to us 44 years ago. He sees that the right books are sent off to you as quickly as possible, and that publishers give us a rapid service on any out-of-stock items.

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CALCUTTA UNIVERSITY CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 **April 1960** **Number 4**

ASLIB CALENDAR

APRIL

WEDNESDAY 27th. Film Production Librarians Group meeting.

MAY

FRIDAY 6th – SUNDAY 8th. Electronics Group conference at Ashridge.

TUESDAY 10th. Repeat course on information searching. See paragraph below.

WEDNESDAY 18th. Economics Group visit to Unilever Ltd, Toilet Preparations Development Unit.

WEDNESDAY 25th. Film Production Librarians Group Annual General Meeting.

TUESDAY 31st. Annual General Meeting.

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

Winter Meetings

Members enjoyed an entertaining evening on 18th February when Mr J. F. Stanley, British Standards Institution, showed a large number of colour photographs, most of which he had taken himself in Moscow and Leningrad. The pictures showed some of the old and new buildings and Russian people going about their daily activities. Mr Stanley's commentary was as interesting as the excellent pictures, as he described among other things Russian forms of transport, the University, comparative costs and standards of living. The pictures also gave an excellent visual setting for Mr Anthony Thompson's talk on his recent exchange visit to the USSR*, the text of which will be published in the May issue of *Aslib Proceedings*.

The meeting arranged for Friday 25th March had to be cancelled as Professor Lisichkin's plans were changed and he was unable to be in London.

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* *Aslib Proceedings*, vol. 12, no. 2, p. 46.

Course on Information Searching

There are a few vacancies for the repeat course on information searching to be held at Aslib on Tuesday 10th May. Notes on the syllabus for this course were published in *Aslib Proceedings* vol. 12, no. 2, February 1960. Those wishing to attend the repeat course should apply immediately to the Meetings Organizer, Aslib.

Electronics Group

The programme for the annual conference to be held at Ashridge from 6th to 8th May includes 'Electronic control: a guide-survey, for the librarian, of a field which embraces a variety of specialized scientific and technical subjects' by Mr Landon Goodman, B SC(ENG), AMIEE, British Electrical Development Association; 'The scope of medical electronics and a brief survey of its literature' by Mr A. Nightingale, MA, PH D, F INST P, St Thomas's Hospital; 'Electronics in guided weapons: with notes on the literature' by Mr T. M. Aitchison, B SC, ALA, English Electric Aviation Co. Ltd; and 'The information services of the Ministry of Aviation' by Miss E. H. Ridler, BA, and Mr E. Alan Baker, ALA, Ministry of Aviation.

A *List of recently coined terms in electronics: for librarians and information officers in electrical and electronic engineering* has been compiled by Mrs E. M. Codlin, Librarian, The General Electric Company Ltd, of England, and Mr C. K. Moore, Officer in charge of libraries, Royal Radar Establishment, for publication by the Group. The list, which contains some eighty entries from 'Asdet' to 'Wamoscope', will be available to members of the Group, price 3*s* 6*d*, from Miss B. Newman, Ericsson Telephones Limited, Beeston, Nottingham. Cheques should be made payable to Aslib Electronics Group.

Fuel and Power Group

An informal meeting which the Group has dubbed 'Hobbyhorse evening' was held on Wednesday 9th March. The principal speakers were Mr F. Hickman, FRSA, ALA, AIL, Ministry of Power, and Mr K. R. Lenel, DIPL-ING, International Combustion Ltd, who described their own methods of speedy indexing for daily and annual indexes respectively.

Furniture Group

Brighton Public Libraries have kindly invited twelve members of the Group to visit the Brighton Pavilion on Wednesday 4th May to look at furniture in the Pavilion. Any member of the Group who wishes to join in this visit and who has not already applied should do so immediately to the Hon. Secretary, Mrs I. Wagner, 19 Museum Chambers, Bury Street, London, W.C.1.

Textile Group

The Annual General Meeting of the Aslib Textile Group will be held on Friday 29th April 1960 at the Federation of British Carpet Manufacturers, 28–29 Worcester Street, Kidderminster, at 12 noon.

Chinese and Russian for Scientists

A course in Chinese for scientists will be started in the week commencing Monday 26th September at the Holborn College of Law, Languages, and Commerce. Classes will be held from 6.15 to 8.15 p.m. on Thursday evenings and the fee for the one-year course will be 30*s*.

The College programme for the coming year also includes a course of Russian for scientists, classes being held twice weekly on Mondays and Thursdays from 6.15 to 8.15 p.m. Fee 32*s*.

Those interested in either of these courses should apply for further particulars and entry forms to Mr P. P. Newmark, Head of the Department of Modern Languages, Holborn College of Law, Languages, and Commerce, Princeton Street, London, W.C.1. Telephone Holborn 5431.

Russian Technical Literature

Volume 1, number 1, dated February 1960, of a new bulletin entitled *Russian technical literature* has been published by the European Productivity Agency (EPA). The aim of the bulletin, which is compiled by the Specialised Information Section, EPA, is 'to spread information to countries on translations available, planned, or in progress, of Russian scientific and technical books, periodicals, or non-serials; on libraries and documentation centres where such literature can be found, either translated or in the original; on specialized booksellers in touch with Eastern countries; on Russian language teaching in Western countries; and on other subjects directly or indirectly concerned with the scientific and technical output of Soviet Russia and other eastern countries'.

The bulletin is duplicated in typewriter script and stapled at the top left-hand corner, with a two-colour title-page. The first issue comprises thirteen quarto pages and contains a short introduction, an article on scientific and technical information from Russia by Alexander King, Deputy Director of EPA, and news of translations and publications on various subjects in preparation and available in English and other European languages.

Further information may be obtained from the Specialised Information Section, European Productivity Agency, 3 rue André-Pascal, Paris.

Unesco Publications

Commencing with volume 14, no. 1, 1960, *Unesco bulletin for libraries* is published six times a year instead of in four single and four double issues. The annual subscription rate is, as before, 17*s* 6*d*; $3.50; 10 NF, but single copies are now priced at 3*s* 6*d*; 70*c*; 2 NF.

Unesco reports also that the following publications are now available or in preparation.

Vacations abroad, volume 12, 1960, gives information in English, French, and Spanish on educational and vocational courses and study tours open to students, teachers, and others wishing to combine their holidays with educational travel. Details of accommodation and financial assistance available for vacation study and training are included. Published February, price approximately 6*s*; $1.25; 4,50 NF.

National libraries: their problems and prospects is expected to be available this month in English, having already been published in French. This volume contains papers and reports presented at the Symposium on National Libraries in Europe, held in Vienna 8th–27th September 1958. Price 10*s*; $2; 7 NF.

Also expected this month are nos 37 and 38 in the Educational Studies and Documents series. Number 37 is *Formal programmes of international cooperation between university institutions*, which will be published later in French and Spanish. Number 38, *Unesco regional seminar on the educational role of museums*, is a report of the seminar held in September 1958, by its director, Mr Georges-Henri Rivière, Director of the International Council of Museums. It will be published in French also. Approximate prices of both these publications are 5*s*; $1; 3,50 NF.

American Book Publishing Record

The first issue, for the month ended 1st February 1960, has been received of a new American national bibliography to be known as the *American Book Publishing Record*, short title *BPR*. This new monthly is intended as a cumulation of entries in the *Publishers weekly* and 'aims to be a complete record of American book publication in the four (or sometimes five) calendar weeks preceding its date of issue'. Entries are arranged by subject according to the Dewey Decimal Classification and indexed by author and title. *BPR* is published by R. R. Bowker Company and can be obtained, price $2 (15*s* 6*d* approx.) per copy, or at annual subscription rates of $10 in the USA, $11 (£4 approx.) elsewhere, from BPR Editorial and Subscription Offices, 62 West 45th Street, New York 36, N.Y., USA.

SLA Convention

The Special Libraries Association will hold its 51st Annual Convention at the Sheraton-Cleveland Hotel, Cleveland, Ohio, from 5th to 8th June. The programme time is divided equally between the association's general activities and divisional subject interests and covers sessions on information as a commodity, 'implication of newer documentation to special librarianship', 'new methods of copying pictures', standards for a newspaper library, 'application of machines to library techniques', retrieval of unindexed information, and bibliographic control of special libraries, among others.

NEW MEMBERS

Corporate

Name	*Locality*	*Representative*
Acadia University	Canada	W. Kirkconnell
Blackie & Son Ltd	London	C. T. Rivington
Chelmsford Public Library	Chelmsford	E. O. Reed
Danish Atomic Energy Commission	Denmark	T. Olsen
East Berkshire College of Further Education	Windsor	Miss P. J. Rye
Gillette Industries Ltd	Reading	R. W. de Vere Stacpoole
Injection Maintenance Ltd	Burnley	R. Carr
International Computers & Tabulators Ltd	Stevenage	Miss J. Sanderson
Matbro Ltd	Horley	J. E. C. Purnell
Rylands Brothers Ltd	Warrington	R. S. Brown
South African Iron & Steel Industrial Corporation Ltd	South Africa	E. D. B. Rush
Stewarts & Lloyds Ltd	London	L. D. Hewitt
Stone-Chance Ltd	Crawley	L. B. H. Hallett
Stramit Boards Ltd	Stowmarket	C. C. Kaines

TECHNICAL TRANSLATION: CO-OPERATIVE ACTION

Aslib Conference, London, 15th January 1960

INTRODUCTION

THE DIRECTOR, opening the conference, said that it had been called because the time seemed ripe for a discussion of problems of co-operation in recording and availability of translations. The special purpose of this conference was to consider ways in which greater co-operation could be achieved, which would lead to greater efficiency and help to eliminate waste of resources on duplicated and inadequate translations. It was hoped that the conference would point the way to early constructive action.

The Chairman, Mr L. V. Chilton, MA, F INST P, then introduced the morning session as follows:

'It is generally accepted that properly organized scientific and technical information services have a vital part to play in the development of the nation's economy. It is equally well recognized that much of the output of information is to be found in technical periodicals and in the flood of *ad hoc* reports which tumble forth in increasing volume from Government departments and other official agencies, here and abroad. The organization of the publication and issue of all this material is as nearly chaotic as any human activity could be: we all know that for every significant article in any field, published in the dozen or so periodicals in which it could be expected, there are likely to be at least one or two equally significant articles in the remaining tens of thousands of regular periodicals, to say nothing of the occasional and non-serial publications. This points to the information worker's first problem—the scanning of a vast and growing body of literature for material relevant to the needs of those he serves; or, rather, the quest for the most rewarding compromise between an ideal all-embracing search and what is practicable in terms of cost and man-power. So he produces his bibliographies, his abstracts, and his reviews.

In doing so, he meets his second main problem: only 40 per cent of the published articles are in English. The remaining 60 per cent are in a foreign language—or, rather, in *many* foreign languages.

Just how serious the language problem is, and how much more severe it may become, was put very strikingly by Dr Alexander King of the EPA to the International Conference on Scientific Documentation held in Washington a little more than a year ago. No one race, Dr King pointed out, has a monopoly of intelligence or of capacity for advanced thought or experimentation. With the spread of knowledge over the globe it was thus evident that in the course of time the number of significant additions to knowledge by different races would be roughly proportional to their populations. Scientific and technical publications would follow, and according to present indications an increasing proportion of these would be in Eastern languages—less and less in the more familiar European languages. It was probably too late to hope for the emergence of a common world language: the most that could be expected might be the adoption of a common *second* language for the purpose of scientific publication.

Meanwhile, we must face the problem as it exists today. Relevant articles have to be found; and, when they have been found, translations of some of them have to be made or found. If the location of originals, after years of grinding work by abstracting agencies and collating organizations—and the development of such tools as the *World list of scientific periodicals*—is becoming less difficult than it was (though, in all conscience, it is difficult enough), the location of translations is still in a most rudimentary state. Yet it has long been recognized as important; and, with the growth of industrial awareness of foreign scientific literature, the demand for translations has grown steadily. It should not, therefore, surprise us to note the many diverse, local and fragmentary schemes which have been introduced at various times to simplify the means of finding and obtaining such translations. Some of the schemes have fallen by the wayside, while others have met with enough success to survive and grow; but it is no exaggeration to say that, taken all together, they do no more at the present day than merely to scratch the surface. In their extent, translations range from those made by an individual for an individual, and those made through co-operative schemes within closely related groups (like members of an industry or a Research Association), to those broadcast to the public as individual articles or as cover-to-cover translations on a commercial or semi-commercial basis. Though there are co-operative translating and locating services in restricted fields, and at least one location index which aims at comprehensiveness (namely that at Aslib), there is in fact no swift and sure way of finding out whether a given paper has been translated and how to obtain a copy of the translation. The existing services are too narrow in scope—or, where broad, are too little used. How can we improve this near-chaotic state of affairs?

In passing, may I mention some figures illustrating the magnitude and rate of growth of this problem. To quote one service alone, *Chemical abstracts*, the annual outturn of abstracts grew from 32,000 in 1930 to 47,000 in 1950—an increase of only 2 per cent a year—and from 47,000 in 1950 to 115,000 in 1958—an increase of practically 12 per cent a year. And remember that translations may be in theory called for in 60 per cent of these cases, i.e. in the case of practically 70,000 foreign-language articles in 1958 in this one field alone.

Aslib, though by no means the first body to tackle this problem, held a one-day conference on translation in 1958, but its discussions ranged over too wide a field: too much attention was perhaps given to the techniques of translation and too little to the organization on an adequate scale of a pool of information on what had been translated and where the translations could be found.

Today, therefore, we intend to concentrate on this organizational problem. We shall study typical past and present schemes for securing and locating translations; we shall try to identify difficulties and suggest means of overcoming them; and we want, if we can, to discover, by free discussion within this very representative audience, what forms of organization will give us what we need in the most practical and efficient way.'

EXPERIENCE OF CO-OPERATION IN TRANSLATION WORK

L. G. PATRICK, FLA

Librarian, Aluminium Laboratories Limited, Banbury

Conference on Technical Translation, London, 15th January 1960

INTRODUCTION

THE PURPOSE of this paper is to make known some experience associated with co-operative ventures in translation work and to include certain reflections arising from it. It is hoped that others here may also feel able to divulge something of their experience, procedures, needs, and hopes in this field in order that today we all may become more fully aware of the realities, strengths, weaknesses, and potentialities of our co-operative ventures in connection with translation work.

Although we are met to consider co-operative action in the field of technical translation, it is suggested that we should throughout our discussions remember that this is but one aspect of that broader co-operation which, in so many fields of activity, is happily so characteristic a feature of our national life. Within this conference one need not mention the varied examples of co-operation that are familiar to so many of us as established features of the library and information world; we have a climate of thought which gives us confidence in coming here today to inquire in which directions this co-operation might be further extended in one particular field.

It has been suggested that it would be of interest to show the place co-operation in the translation field has in a specific industrial library. The following figures, taken from the experience of the library in which the speaker now serves, may help to meet this wish:

Units of translation work requested 4th July 1958–31st December 1959	225
Units dealt with by internal translation service	168
Units dealt with by commercial translators	13
Units dealt with by tracing translations	12
Units currently awaiting translation (31st December 1959)	32

A unit of translation work is here used to represent one specific item of requested work such as a translation of a published paper in full or part, a section of a book, correspondence, an internal document, etc. During the same period we have notified Aslib of forty translations made in Banbury and an unknown additional number of translations made in Canada; we have during the period received two requests from Aslib for the supply of translations. It is our experience that interest in foreign-language material grows. One practical difficulty that arises is that as pressure of work increases there is a growing tendency to meet requests by means of oral translations; this can often meet urgent need but is wasteful from the long-term viewpoint. In these circumstances the problem arises as to whether translating staff should be increased, whether more work should be done commercially or whether further co-operative action may help solve the problem in some measure.

CO-OPERATION AMONG ASSOCIATED ORGANIZATIONS

Reference has been made to twelve translations having been traced; these were directly related to our work in Banbury. Later it will be shown that during a slightly shorter period we actually traced eighteen existing translations; the additional six were obtained for colleagues in Canada. To work closely with related organizations is the first essential of co-operation. In our case this has led to particularly close relationships being maintained with associated laboratories in Kingston, Ontario, Canada, and for a number of years information was exchanged by conventional correspondence methods regarding our respective translation interests and intentions; we have helped each other by endeavouring to trace existing translations and by the exchange of completed translations. Early in 1958 it was decided to exchange inquiries regarding the existence of translations on 5 in. × 3 in. catalogue cards rather than by letter; the entries on the cards are so made that the cards can easily be inserted in a normal author catalogue. By this means we are able to check retrospectively regarding inquiries by author much more easily than by searching in correspondence files kept in date order. Such an exchange of cards began in May 1958 and continues; the idea may have application elsewhere.

CO-OPERATION AMONG NON-ASSOCIATED ORGANIZATIONS

Subsequently the possibility of using this method of inquiry on a wider scale was considered: on 4th July 1958 certain proposals were made to a number of centres concerned with translation work but outside our own group of companies. Full details of these have been published* and it is therefore not intended to describe them more than briefly here. The essential features of the scheme are that translation inquiry cards (Figure 1) are sent only to those having expressed willingness to receive them. Non-receipt of a reply is taken as indicating that no translation is known to exist. Cards are suitable for inclusion in 5 in. × 3 in. card catalogue cabinets where an entry may provide continuing evidence that either the inquirer still needs a translation or, alternatively, may have one available. The cards do not commit us to make a written translation suitable for issue, but our translation activities are clearly directed towards those papers in which we have declared an interest; a useful proportion of them do later become available in translation. Since July 1958 we have been using this inquiry card system and so disseminating certain information regarding our translation interests among some sixteen other organizations; we inquired about one hundred and one papers up till 26th November 1959 and while of these the Aslib Translations Index enabled us to trace ten translations we were able to trace an additional eight by means of our inquiries elsewhere. From a later check on 29th December 1959, three of the eight were then found to be in the Commonwealth Index at Aslib and five were not. Of these five two are admittedly translations from Hungarian into German and Russian into French respectively, leaving three of which Aslib then had no trace; we have been able to supply information regarding two of these but the other translation was from a private source that we could not disclose to Aslib. What has our experience in this respect shown? Very little, because the figures involved are so low. Yet we have undoubtedly found that by broadening our field of inquiry we are at present able to trace more translations than we can trace by inquiry to Aslib alone. Here one quotes a member of the *ad hoc* committee that prepared this conference: 'If we all did this the result would be chaos!' This is agreed. Can we therefore so improve our centralized control of information regarding the availability of translations that such an individual inquiry scheme becomes worthless instead of worth while?

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* L. G. PATRICK. Scheme for checking availability of translations. Aslib Engineering Group *Electrical Translators Bulletin,* October 1958, vol. 4, no. 3, pp. 18–20.

COMMONWEALTH TRANSLATION INDEX

Mr L. Goldstone, Aslib's Information Officer, has kindly supplied the following information regarding the Commonwealth Index of Translations held at Aslib:

1st January 1960

Year	*Entries at year end*	*Inquiries*	*Success percentage in tracing translations*
1957	29,000	3,837	9.6
1958	39,000	5,482	10.4*
1959	51,000	5,378	12.5

The translations covered by the Index are mainly from the German and Russian into English. Two hundred and three organizations notify Aslib of their translations. Normally two weeks elapse between the receipt of information regarding a translation and its inclusion in the Index. Plans are in hand to write over the next six months to the 203 contributing organizations to ask if they can possibly provide further aid and to all other members to ask if they can help. It is suggested that, coupled with this effort to expand the coverage of the Index, the time is right for Aslib to sponsor a careful investigation into every aspect of co-operation in the translation field. Among the matters that may be suitable for consideration are the following:

1. How further can the extent to which Aslib is able to advise its members of all those translations into English that are available within the United Kingdom, the United States and the Commonwealth through co-operative action, or by purchase, be increased?
2. To what extent should Commonwealth Translation Index staff actively search for translations?
3. Should the Index include English translations and long English summaries of foreign-language papers published in periodicals? A

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* The figure 17 per cent quoted for this year in *The work of Aslib for the year ended December 1958*, p. 11, is understood to be wrong.

search through an abstracting bulletin for the two years 1958 and 1959 gives the following results:

Full translations in English or American periodicals:	17
Long summaries in English or American periodicals:	15

The original languages concerned were as follows:

German	11 papers
French	9 ,,
Russian	7 ,,
Italian	4 ,,
Dutch	1 ,,

These numbers are low compared with the annual intake into the Index but the search was confined; more translations could doubtless have been found.

4. Would it be worth while attempting to do more by way of tracing and recording translations from unfamiliar languages into more familiar languages?
5. For what reasons do some Aslib members seem to withhold their translations from co-operative use?

DEPOSIT AND GIFT OF TRANSLATIONS

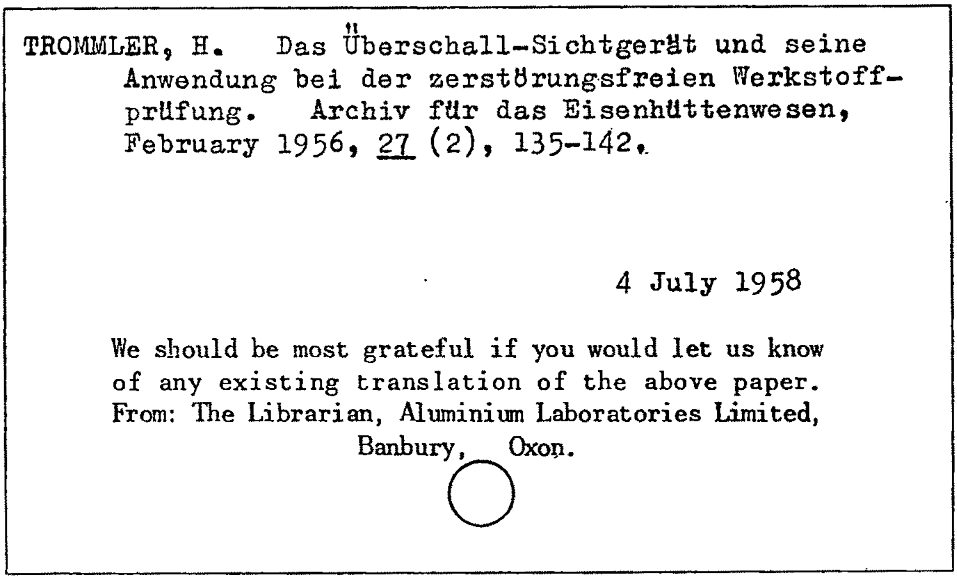
There is some insecurity related to the long-term value of the Commonwealth Translation Index. It records translations of which copies are not available in any one central depository; they are scattered over many organizations the futures of which may be varied. There is, however, some informal deposit of translations in national centres. Notably one would mention the DSIR Lending Library Unit's appeal for translations from Russian, other Eastern European and oriental languages. National possession of translations seems to be of real value, and one would urge extreme liberality by those organizations having both translation and reproduction facilities. It is suggested that the desire for fullest co-operation should lead all such organizations to wish to deposit copies of their translations in national libraries, research associations, government departments and establishments, and other organizations believed to be interested. Such action would contribute to the national good and ensure that translations are still widely available when, perhaps, the original stock has become too low to permit external requests being met. In the case, however, of translations from Western languages where copyright restrictions apply it may not be possible legally to urge such liberality of action. Mr J. B. Reed will be discussing this problem in more detail this afternoon. While we may advise Aslib of our translations and make them available on request, it is not clear whether a translation centre may legally reproduce in good form a translation from a Western language and make it available by free gift at the time of issue to those organizations that are thought to have good use for it. Such action is thought possibly to be contrary to fair dealing copyright requirements. One quotes from the 1948 Royal Society Scientific Information Conference recommendations:

> 'Science rests upon its published record, and ready access to public scientific and technical information is a fundamental need of scientists everywhere.

> All bars which prevent access to scientific and technical publications hinder the progress of science and should be removed.'

It would seem that we may need some international 'Fair Translation Declaration' which would permit those having competent translations to offer for general use to act somewhat along the lines of the Fair Copying Declaration. According to some such arrangement no breach of fair dealing requirements would be envisaged if, for the common good and at no profit, organizations were to make competent translations of single papers, and in single copies, available to others either on their own initiative or at request. Full acknowledgment would have to be given to the original source and the source of the translation would need to be shown on it. The restriction of a competent translation of a fully published paper to a closed circle seems to the speaker to be wrong and contrary to the intention of authors in publishing papers to the world. Utmost liberality by all is strongly urged in every aspect of this matter.

One further way in which translations may be co-operatively shared is by offering them for publication in an appropriate English journal. At the suggestion of our Canadian colleagues we offered a translation of a Russian paper dealing with corrosion testing procedures for publication* in this way; it was accepted and this is believed to be a useful procedure which we hope to follow again. It is wondered whether Aslib members could do more by having their translations published in the technical Press, subject, of course, to such papers and their translations being suitable for this treatment and all necessary permissions having been obtained.



TROMMLER, H. Das Überschall-Sichtgerät und seine
Anwendung bei der zerstörungsfreien Werkstoff-
prüfung. Archiv für das Eisenhüttenwesen,
February 1956, 27 (2), 135-142.

4 July 1958

We should be most grateful if you would let us know
of any existing translation of the above paper.
From: The Librarian, Aluminium Laboratories Limited,
Banbury, Oxon.

FIGURE 1. Translation inquiry card.

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* *Corrosion technology,* 1958, vol. 5, p. 386.

THE BRITISH IRON AND STEEL INDUSTRY TRANSLATION SERVICE

MARTIN WRIGHT, MA
Secretary, Translation Service, The Iron & Steel Institute

Conference on Technical Translation, London, 15th January 1960

MR PATRICK in his paper has called for a liberal policy on the part of companies in making translations available; I shall now describe one method of combining liberality with enlightened self-interest. Since I believe the BISITS to be the first successful one of its kind, I shall describe how it was formed and developed as well as how it works today.

THE OLD SERVICE

For twenty years the Iron and Steel Institute provided a modest translation service: translations were selected by the Assistant Secretary or the Librarian as being of probable interest, at the rate of about twenty-five a year, and sold for £1 each. In twenty years 514 translations were issued, and the service approximately covered its expenses, although it did not advertise apart from an occasional announcement in the *Journal of The Iron and Steel Institute.*

There is close liaison between the British Iron and Steel Research Association (BISRA) and the ISI, and in November 1956 BISRA asked the ISI whether the translation service could be extended by obtaining the co-operation of steel firms. The formation of a 'pool' was suggested to exchange translations and possibly sell them to others. The service would need to be specially financed at first, but should aim to become self-supporting.

A review of existing translation services showed the main ones to be Aslib, DSIR, and Henry Brutcher.

Aslib

Aslib maintains the Commonwealth Index of Scientific Translations, which is notified voluntarily by various organizations of translations they have made. It was agreed that all BISITS translations should be notified to Aslib, but we regretted that since most American translations are excluded from the index we could still not be sure, before starting work on a translation, that it had not been done already. As a partial safeguard we took to compiling our own index of other people's translations in our field.

A section of Aslib, the Textile Information Group, attempted a co-operative scheme early in 1952. Participating organizations notified an appointed person of their intention of having a translation prepared. If more than one required a translation of the same article, the first to notify was asked to proceed with the translation, the others being informed of its preparation and expected to share the cost. The scheme was of a voluntary nature and failed for several reasons, which have been described elsewhere*; the principal ones were the complicated financial arrangements, which, while attempting to avoid all financial risk, did not save the companies very much money; the limited number of participants; and the lack of a full-time secretariat.

Department of Scientific and Industrial Research

The DSIR maintains an index of Russian translations; unfortunately its exact relationship to the Commonwealth Index is not known. The DSIR co-operative scheme for preparing Russian translations at that time (November 1956) applied only to certain Russian periodicals. Two requests were necessary before a translation was made, two-thirds of the cost being shared by the two requesters and one-third contributed by DSIR. If more than two requests were received, the price was reduced on a scale from 8*s.* per page of original article for two requests to 2*s.* 6*d.* per page for nine or more requests. The charges for overseas inquirers were a little higher. The scheme worked well, but was rather slow and must have been very complicated to administer, as the price of a translation kept changing. Since that time it has been streamlined. Only one request is now necessary, and the requester undertakes to edit the translation if called upon to do so: if he does, he receives a free copy. The translations are then available for others at 2*s.* 6*d.* per page of the original Russian. The co-operative nature of the scheme is extended by an invitation to all who make Russian translations to present a copy to the Lending Library Unit, where they are available for loan free of charge.

This scheme is certainly simple; also it does not seem to be complicated by the necessity to cover expenses.

Brutcher

Mr Henry Brutcher has been in the business longer than any of us: he started his service in about 1926, since when he has produced nearly five thousand translations on metallurgy, mainly iron and steel. He is a metallurgist, which is a guarantee of the quality of his translations, and he claims fifteen languages, including Sanskrit; also he was one of the first commercial translators to hit on the idea of taking the risk of reducing prices in the hope of selling more than one copy of each translation. Until we had our own cost data, we based our prices on his.

PROPOSALS

This information was presented to a meeting on 16th April 1957, of information officers of interested companies and representatives of the ISI, BISRA, and the British Iron and Steel Federation. The following objects and proposals for a translation service were agreed:

Objects

1. To enable a wider range of translations of technical and other papers to be made available to Members of BISRA and of the ISI promptly and at reasonable cost.
2. To reduce duplication in the preparation of translations.

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* H. THORNTON, Translations—how they are being tackled. *Aslib proceedings,* vol. 7, no. 2, May 1955, pp.63–8.

Proposals

1. POOLING OF TRANSLATIONS

a. The Translation Service will be started by a Consortium of a few companies on 1/5/57.

b. It will be organized by the ISI with the help of an Advisory Committee.

c. In order to make translations, prepared by each company, available to others, a central 'pool' will be formed. Members of the Consortium will contribute suitable translations to the pool. These will be supplemented by other translations, which will be purchased or commissioned or obtained from other sources. The pool will be 'owned' by the Consortium.

d. When a member of the Consortium requires a translation which it does not itself wish to prepare, or when a translation is required by another member of BISRA or of the ISI, the ISI will be informed and will then ascertain:

> whether the translation is available from some other source or is going to become available in the near future, or
>
> whether another member of the Consortium is prepared to do it.

If this is not the case, the ISI will arrange for the translation to be prepared elsewhere. It will save time and trouble if forms are used for circulating information and inquiries to members of the Consortium.

2. FINANCIAL ARRANGEMENTS

e. It is intended that the service shall be more or less financially self-supporting. Each translation will, therefore, be priced according to a fixed scale based on the number of pages and the language of the original. A company contributing a translation will be credited with its value and the translation will be available to others at a charge fixed in accordance with an agreed scale. A reduction will be made to purchasers who require more than one copy.

f. All charges incurred, including the cost of purchased or commissioned translations, multigraphing, etc., will be charged to the Consortium. A small charge will be made to cover expenses and overheads incurred by the ISI.

g. Translations will be sold by the ISI on behalf of the Consortium to Members of BISRA and of the ISI on an agreed scale. The same price will be charged to non-Members as to Members.

h. If the operations of the Consortium result in a profit by 30/4/58, this will be ploughed back so as to increase the service or reduce the price or provide a reserve.

If the operations result in a loss, the members of the Consortium will divide this.

Comment

To make it possible for the scheme to operate successfully, it is necessary for companies:

1. To continue to translate a substantial number of papers and for them to contribute these translations to the pool.
2. To be co-operative in preparing translations required by others or in advising how these can be obtained, and to avoid the use of bad translators.
3. To give information and to reply to inquiries promptly.
4. *To be prepared to contribute an agreed sum in the event of the operations of the Consortium resulting in a deficit.*

Other points decided at this meeting were that each company should send in a list of its translations for the last seven years; if spare copies of any of these were available they would form the initial 'pool'. Translations should be accepted from non-members of the Consortium, who might later be invited to join. The scheme would collaborate with Henry Brutcher by exchanging advance information of proposed translations, to avoid overlapping.

The point was raised that some firms might prefer not to have their interest in a particular foreign paper divulged. It was felt that this was an unnecessarily cautious view for any company to take, but it was agreed to omit the name of the firm if desired.

EARLY DEVELOPMENT

Eighteen steel companies were invited (at directorial level) to join the scheme, on the understanding that they would indemnify the ISI against any loss. Fifteen of these agreed, and the scheme officially came into being on 1st May 1957, arrangements being handled from then on by information officers or librarians. At first it went slowly. By November 1957 (i.e. after six months) 101 translations were available, the cash position was unpromising, and the pool 'owed' more to its members than they owed to it:

Receipts from sales		*Expenditure*	
Consortium	£550	Credits to Consortium members	£826
Non-Consortium ..	£645	Translation, multigraphing, etc.	£448
	£1,195		£1,274

At this period we went to enormous lengths to analyse the exact state of the service and make it seem rosier. We counted the number of advance orders we had received for translations still in preparation, we estimated the nominal value of our unsold stock, we counted the number of translations contributed by each company, the cost to the ISI of each translation, the amount earned by the translations contributed by each company.

But the *Fortnightly lists* of new translations were now being sent to thirty-one organizations outside the Consortium, a third of them in the United States, and after one year's working 286 translations had been produced and had sold an average of five copies each, just over half the sales being to non-members of the Consortium.

TURNING POINT

In July 1958, after fourteen months' operation, the Institute was able to tell a meeting of the Consortium Committee that the aims of the service had been achieved: more translations had been produced (the rate is now about thirty a month) and duplication of effort had been stopped. As for the financial position, the members were asked to pay for the translations they had received, less the credit due to them for translations contributed (these having been treated as 'paper transactions' during the first year), and accounts were then square. Four companies had contributed more than they had received, and enough money was available to pay them, but two of them waived their credits, and two used them up by buying more translations. The surplus was used to make translations for which there were less than three requests, to pay for checking, and in some cases to pay more to translators. The figures at 30th June 1958 were:

Receipts from sales		*Expenditure*	
Consortium	£3,599	Credits to Consortium members	£2,396
Non-Consortium ..	£3,521	Translation, multigraphing, administrative expenses	£4,483
	£7,120		£6,879

(Note: The Consortium figures include those from BISRA, which were later cancelled by agreement.)

COST, CREDITS, AND PRICES

The cost data which we had acquired by this time enabled us to revise the scales of credits and prices. Credits to companies were based on the actual cost of making the translation, so that it makes no difference to the position of the service whether it obtains a translation from a company or a private translator (except that the figures were based on low translating charges). If the company contributes twenty-five copies (as most do) there is an additional credit of £1 per 1,000 words and 10*s*. per illustration. The price is then fixed by the approximate equation:

$$P \simeq \frac{t + m + i + \frac{a}{n}}{s}$$

where P is the price,
t the cost of translation (35*s*. per 1,000 words for German, 60*s*. for Russian)
m the cost of multigraphing (20*s*. per 1,000 words)
i the cost of reproducing illustrations (10*s*. each)
a the annual administrative costs of the service
n the number of translations produced per annum
and s the average number of copies of each translation sold.

The expression o/n is a constant equal to about £7, so that short translations are relatively more expensive than long ones; we have taken $s = 5$. In addition, we charge 2*s*. 6*d*. per illustration.

As an example of how this works, we will take a 3,000-word translation from German with four illustrations. A company contributing twenty-five copies receives a credit of:

translating @ 35*s*. per 1,000 words	£5	5	0
duplicating @ 20*s*. per 1,000 words	£3	0	0
illustrations @ 10*s*. each	£2	0	0
	£10	5	0

and the selling price is:

text	£2	10	0
illustrations @ 2*s*. 6*d*. each		10	0
	£3	0	0

Thus if a company keeps a translation to itself, it obtains the one translation for a given outlay, but if it contributes it to the service it obtains for that sum not only the original translation but also enough credit to buy three others of equivalent length.

The Translation Service also benefits, because while the credit is three or four times the selling price, the average number of copies sold is five. Suppose a new company joins the Consortium, contributes a translation, and claims in return enough credit to buy three translations at £3 for which it would otherwise have paid cash. We have 'lost' so much cash. But on average we shall probably sell five copies of the new translation at £3, so that to set against our 'loss' of £9 we have receipts of £15, which cover the administrative costs. The figures are, of course, approximations.

The accountancy for Consortium members is simple. They receive credit notes and invoices for translations contributed and supplied; they do not pay on the invoices, but on the monthly statements, which take the form:

Balance at beginning of month (+ for debit, — for credit)
+ purchases during month
— credits during month
— cash paid during month

Balance at end of month.

If there are outstanding credit balances at the end of a year, we decide at the annual meeting how to treat them.

The system which I have described provides over three-quarters of our translations, but, thanks to the co-operation of the companies, a much smaller proportion of the administrative work, most of which is spent dealing with the requested translations which are arranged by the ISI.

REQUESTS

There are two kinds of request:

1. If a company wants a translation urgently, it offers to pay the full cost, if required; the translation is put in hand at once, and details are meanwhile circulated (on a 'List B'). If one or more requests are received, the translation is included in the service when it is ready.

2. A company requires a translation, but is not in a hurry, and only wants it if it is included in the service. The routine is to circulate particulars (on a 'Form C') to the Consortium and some others. If two additional requests are received, we are likely to sell our average of five copies altogether, and we commission a translation which, after editing, is put into the service. If only one additional request is received, both interested parties are asked whether they will share the cost. These negotiations required much correspondence in the early days, and now we do not always insist on two—or even one—extra request, but translate at once. The only justification for the 'Form C' now is that occasionally one of the companies offers to make the translation.

I will end by mentioning some ancillary features of the service, which have played an important part in its working.

LISTS

We have used forms to replace correspondence as far as possible, but have tried to keep formalities to a minimum. 'Form A', which companies use to notify us of their proposed translations, has always been treated with priority: if on checking we find the translation is already in preparation we notify the company by telephone if necessary.

Since the beginning we have issued fortnightly lists of translations available and in preparation (notifying Mr Brutcher by air mail weekly): this has helped to reduce the overlapping, and the fortnightly lists, which we now send to 300 organizations and the British Iron and Steel Federation distributes to 1,250 more, have been of great value in promoting sales; they are, in effect, lists of the pick of the foreign literature. BISRA have also helped greatly by listing our translations in their six-weekly Report Lists and twice-yearly Open Report Lists; and there was a great demand for the cumulated, indexed list of the first year's translations. All lists are sent free of charge.

In addition, we compile a list of other people's translations. This brings no direct advantage to the service, but a considerable indirect one, by providing the cards for our index without our having to type them or pay for them: we have an arrangement whereby the firm which handles all our multigraphing makes cards for all these translations (and for our own, including those in preparation) and sells them, giving us a copy of each card by way of royalties.

CHECKING

The question of checking translations arises. Those provided by companies we assume to be competent (the note on the cover of our translations, saying that we would like to be informed of inaccuracies, has produced few responses). The remainder are checked by the ISI. In the early days we tried to get voluntary help in the work of editing from research workers in the industry; now, we pay them five shillings a thousand words, or more if the translation requires much editing, and this works much better.

ILLUSTRATIONS

All our translations are complete with illustrations. We try to reproduce the English version of the captions on the facing page, or on the same page as the illustrations themselves. The techniques of doing this deserve a paper to themselves.

SUMMARY

These, then, are the requisites for a co-operative translation scheme:

first and foremost, the full and willing co-operation of the companies, and financial encouragement for it; with a guarantee from them that they will underwrite any loss;

streamlined administration, which uses standard forms where possible but is not dependent on them;

translations complete with illustrations;

an index of its own translations and (until it is done centrally) of other people's;

regular and frequent lists of translations available and in preparation, to promote sales and to avoid overlapping of effort, especially with government-subsidized translation schemes.

adequate payment for translating (and checking).

I have two suggestions to make, connected with the documentation of translations:

1. There should be a unified index (up to date) of translations into English, incorporating the Aslib, DSIR, and SLA indexes; all new entries to be included in *Technical translations*, which would absorb the translation lists in *LLU Bulletin.* The index should be maintained in each continent.

2. All translations *in preparation,* including DSIR's, should be recorded in this index; they need not be listed in *Technical translations* till they are ready.

ACKNOWLEDGMENTS

I would like to end by thanking people: the information officers and librarians of the Consortium member companies, for doing so much to lighten the administrative work; the firm which is responsible for the typing and the immense amount of preparatory work involved in reproducing illustrations and captions; and the Iron and Steel Institute and my colleagues there for lending me their knowledge and their support, especially my predecessor, who made the scheme work in the difficult early months of its existence.

PUBLISHED ENGLISH TEXTS OF FOREIGN PERIODICALS

E. G. HILL

Lending Library Unit, Department of Scientific and Industrial Research

Conference on Technical Translation, London, 17th January 1960

NEED FOR EXTENSIVE TRANSLATING PROGRAMMES

I HOPE that no one here thinks that I have come along today to offer an alternative to the translation pools we heard about earlier this morning. On the contrary, I think that we need more pools and bigger ones. Nevertheless, although existing translation pools can be improved the point will eventually be reached when any further increase in the size and scope of a particular pooling system will result in it becoming so unwieldy that, from the user's point of view, it will be uneconomical either in terms of the cost of maintaining and using it, or in terms of the time taken to get an answer out of the system. To delay that time as long as possible I think we shall have to try to limit the rate of growth of these translation pools. One way of doing this would be to encourage the more extensive simultaneous publication of scientific texts in several languages. There is nothing new about this type of publication. For example, foreign authors may, if they wish, submit their manuscripts for publication in the regular English-language journals. It is also common practice to find the papers of international conferences published in several languages and most people are familiar with the multi-language Unesco publications and journals like *Progressus* which have been published in several languages for many years. In general, however, this practice has tended to be haphazard, but there is a notable exception in the case of the cover-to-cover translations of important Russian scientific journals. Here there has been a deliberate systematic approach and now there are about seventy[1, 2] of these publications appearing regularly. The rate of growth of these Russian cover-to-cover translations has been spectacular but this, I think, is the only peculiar thing about them. In point of fact the speed with which they have been launched merely reflects the speed with which we have all become uncomfortably aware of the high status of present-day Russian research and technical development. The Russian translation situation, therefore, should not be regarded as an isolated or unusual phenomenon, and we should be prepared to see and encourage the growth of similar translating developments with other languages. We all know how quickly yesterday's underdeveloped countries can set up important scientific and technological research establishments, and, bearing this in mind, the necessity for a massive translating programme anologous to the Russian programme in a variety of languages which, hitherto, have not been very important for the communication of scientific information, may not be too far in the future. A detailed examination of the Russian translating situation will therefore be useful and may help us to decide how best to tackle the general translating problem.

EXPERIENCE WITH RUSSIAN COVER-TO-COVER TRANSLATIONS

I want to deal mainly with periodical literature, as I think that the problems here are more difficult and more urgent than those encountered with books and monographs.

Perhaps the main advantage of having cover-to-cover translations freely available lies in the elimination of the 'hit or miss' selection of translations of individual papers from important journals. The time required for this unsatisfying and expensive pastime on the part of the individual scientist is eliminated. The general literature searching problem is also simplified and a large number of translations become available at reasonable prices which are within the reach of even the most impecunious university. In theory, also, the translations are available at the earliest possible date because of the automatic production process.

Some people believe that the advent of the cover-to-cover translation will aggravate the 'paper problem'. In practice I think that this paper problem—if, in fact, it exists at all—is a problem for the information officer and the information processor rather than for the scientist, who can seldom find all he needs to know about a specific subject in the literature.

The producer of cover-to-cover translations has many difficulties. He first has to decide what cover-to-cover translations he will produce, and to do this he has first to isolate the most important journals in the language area with which he is dealing. Secondly, he has to assign to each journal a priority rating, and finally he has to find someone to do the work. As yet there has been no serious shortage of adequately qualified translators and editors who are anxious to deal with Russian scientific literature. If this did eventually become a problem I think one could think in terms of training more people of the type required. This would not necessarily be a difficult job as, for example, one good translator should be able to handle a monthly journal of average size (30,000 words per month) and still have time on his hands. A full-time translator is not normally regarded as the best person to tackle a cover-to-cover translation, but if such a translator is in day-to-day contact with a specialized research organization in the relevant field, this shortcoming is virtually eliminated.

So far the problem of finding the money to pay translators, editors, and printers has proved to be the most difficult one. In America and in this country the financial difficulties have tended to be overcome by government subsidies and, from the practical point of view, this was probably the only way in which rapid action on the required scale could have been assured. A great deal of money was needed to launch the Russian cover-to-cover translations and the chance of any substantial immediate financial return was slight. Other more conventional journals occasionally seemed to have the same problem. At a meeting of the Scientific Publications Council in April 1959[3] it was said that twenty years elapsed before *Nature* started making a profit. I hope that in the case of Russian cover-to-cover translations the waiting period will not be quite so long.

ECONOMICS OF COVER-TO-COVER TRANSLATIONS

The production of cover-to-cover translations is an expensive business, but it is very difficult to find any figures that mean very much. It has been estimated that with the American translations of Russian journals the overall cost of production and distribution is about $25 per Russian page. British experience of this work is much shorter and much more limited than American experience, but it seems that similar British cost figures are of the order of £7 per Russian page, which is slightly less than the American figure. American and British cover-to-cover translations have experienced a good many 'teething' troubles, and it is probable that the production cost will gradually diminish. The bare translating costs work out at approximately 13 per cent of the total cost, and knowing this it is fairly easy to work out the cost of producing cover-to-cover translations of journals in other languages.

In America it seems that the income from subscriptions is equivalent to about one-tenth of the overall cost.[4] In this country things seem to be a little better, and about 20 per cent of the overall cost is already being met by subscription income. Needless to say this low level of subscription income goes hand in hand with low subscription levels. In America and in this country the average subscription level is about 250. There are, of course, exceptions, and one British cover-to-cover translation has already attracted more than 1,000 subscribers. Superficially, at least, it is possible to regard this financial picture as a very gloomy one, and one might deduce from it that the demand for translations in all their forms is likely to be intensive rather than extensive, and that, consequently, those who clamour for them should be prepared to bear the full economic cost, or to forgo them. My own view is that the financial situation is mildly encouraging. I think we must remember that with cover-to-cover translations we are trying to sell something which is still a relatively unknown quantity and something that tends to be a highly specialized commodity. I think also that cover-to-cover translations still have to outgrow the bad reputation they acquired in their earlier days for instability, irregular publication dates and high and erratic pricing policies.

NEED FOR EXPLOITATION OF WHAT NOW EXISTS

At present the rate of increase in the Russian cover-to-cover translation population is lagging behind the rate at which new, high-grade Russian journals, suitable for the full cover-to-cover translating treatment, are being published. Undoubtedly the same situation exists with other languages but probably on a much larger scale. With Russian translations I believe that the intention both in this country and in America is for a stabilization of Government financial support at roughly the present level. In the next few years, therefore, the expansion of the present-day Russian translating programme will largely depend on the expansion of subscription income. In other words, we will only get new subsidized cover-to-cover translations if the subscription income produced by existing cover-to-cover translations increases. It is up to the universities and industry, and librarians in particular, perhaps, to buy and use the presently available translations if they want to see the present facilities expanded appreciably. Abstracting organizations might also be able to help. They might, for example, find it more convenient sometimes to abstract from the translation rather than from the original. It might also not be too difficult for relevant abstracts to carry an indication that a translation of the article concerned exists in a particular cover-to-cover translation. Certainly, I think, the abstract user would appreciate that sort of information.

Even if unlimited funds for translation were available there is a limit to what can usefully be accomplished with cover-to-cover translations. There is obviously no point in spending money and man-power on cover-to-cover translations of journals which contain only a small proportion of useful material. It is, I think, for this type of journal that the translation pools must cater, and this is why I think that existing pooling systems must be expanded and streamlined, and run in conjunction with cover-to-cover translating schemes.

So far I have talked mainly about the cover-to-cover translation of periodical literature. Books and monographs are certainly important but the difficulties of dealing with such material are much less. Commercial publishers are used to selecting foreign-language books and publishing translations of them in the normal way. Specialized books with small potential markets are, of course, difficult to deal with, but I think the problems associated with their publication do not essentially depend on the language in which they are originally published.

I have suggested that what has been done with Russian-language material will have to be done, sooner or later, in other language areas. Various people have tried to estimate the size of the problem, and one modest estimate[5] I have been able to find suggested that today there is a need to give five hundred journals the cover-to-cover translation treatment. This estimate dealt only with the needs of the English-speaking world. I have no intention of adding my guess to what has gone before, but if we take the current Russian translating programme as a pattern, and even if there were a need to produce cover-to-cover translations of one thousand journals or more, there would clearly be no insuperable financial or man-power difficulties.

COPYRIGHT

The rapid expansion of the Russian translating programme was made possible by the absence of copyright difficulties. With other languages we are not in such a happy position. It is not, therefore, too early to start thinking about copyright difficulties, and I myself think that these problems might well yield to co-operative action at an international level. One way of eliminating the copyright problem would be to make sure that it does not arise. Perhaps the publishers of important scientific journals should be encouraged to realize now that sooner or later there will be a demand for their journals to be published in a number of different languages. It is up to the publishers, I think, to start thinking about ways in which this can be arranged.

THE IMMEDIATE FUTURE

In conclusion I want to emphasize that translating is only a means to an end. The basic problem today is to discover as quickly as possible what scientific developments are occurring in other countries. Freely available translations help to provide a partial solution to this problem, and in essence we are using present-day tools to tackle present-day problems. Translation problems as such would be non-existent if there were an international language of science, but I cannot see any universal agreement on this being obtained within the next few decades. Undoubtedly science itself will eventually be able to help speed up and simplify the work of producing translations and making them available. Much useful work is, of course, being done but it seems unlikely that the results of this research will be ready for large-scale application within the next ten years. In the meantime, therefore, I think we should forget about these interesting possibilities and do our best to ensure that we are making the best of our existing services.

The opinions expressed in this paper are those of the author and are not necessarily those of the Department of Scientific and Industrial Research.

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CO-OPERATIVE ACTION: WHAT CAN BE LEARNED FROM ABROAD

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BEFORE we can establish whether anything can be learned from abroad, we must find out what services are available abroad. A recent survey by Frances E. Kaiser[1] of the Georgia Institute of Technology enumerated no less than forty-two translation pools in eleven countries showing that there are schemes in many countries, and quite a few in some countries, but only a few national schemes, notably in East Germany, Spain, the Netherlands, and France. This survey does not include the translation pools in the USSR and Poland, about which far too little is known. Mr Patrick and Mr Goldstone have already spoken about the Aslib index, but it must, of course, be borne in mind that this index is duplicated in several Commonwealth countries, namely in Australia, Canada, India, New Zealand, and South Africa. In view of the fact that their experience must perforce be rather similar to that of the British section of the index, I shall not discuss this any further.

Beyond the fact that a national translations centre exists in Spain within the Patronato Juan De La Cierva, little is known about its activities, scope, and efficiency. Although a number of figures are available for the national services in France and the Netherlands there is again very little information about their efficiency so that it is difficult to draw any conclusions from their activities. The most outstanding example of a national translations pool is the one run by the East German Centre for Scientific Literature in Berlin; according to the latest figures they have over 100,000 references to translations,[2] i.e. about twice that of the Commonwealth index at Aslib. About 60 per cent of these translations listed in the East German register are unpublished translations. One of the most remarkable features about the East German scheme is the rather high success figure of 33 per cent over a period of three years, namely 1953–5.[3] Let us compare this with the Aslib figure of 12.5 per cent and Mr Patrick's 17.9 per cent. It may also be interesting to note that this East German service has deemed it advisable to index their translations both by author and subject.

This is at variance with the declared Aslib policy which was enunciated by Mrs Mackiewicz,[4] who contended that the purpose of the translation index is not to answer 'What is there available in foreign languages on this or that subject' but purely to answer 'Is a translation already available of this or that known foreign article'. Unfortunately no recent figures are available about this East German index; most of my figures are taken from a description dated 1956. It would certainly be interesting to know whether the rather encouraging figures have been maintained since then.

One of the noteworthy features of the French system is the recent introduction of a Selecto-Cordonnier mechanical selector, which enables translations to be traced even from incomplete data such as only the author's name, subject of the article, title, or date of periodical from which reference was taken, etc.[1]

I think it would also be very interesting to hear about a negative result, namely one reported from Italy[5] where from 1947 to 1950 the Associazione Italiania de Metallurgia carried out an experiment in working a centralized service for exchange of translations between four companies and the research department of one of the largest iron and steel works. So as to avoid duplication of work the parties to this exchange notified the centre immediately translations were about to be begun; the Associazione in turn notified the other parties and on request furnished them with copies of the translations when completed. At the end of these three years, however, the scheme was given up and the parties were invited to make their exchanges directly. Its abandonment was the result of various practical and economic difficulties encountered in regard to premises, staff, overheads, accounting, and the difficulty of agreeing as to price; the technical difficulties of reproducing illustrations, printing the texts, etc., and the desire of some parties to make the service available to outsiders, were other contributory factors.

The sparseness of the lessons to be learned from abroad is perhaps one of the reasons why the Organization for European Economic Co-operation, and the European Productivity Agency in particular, are rather worried about the many-sidedness of efforts in the field of co-operation. They have therefore commissioned a report on the *Utilization of Russian and other Eastern scientific and technical literature*[6] with the specific proposal of setting up a European Translations Centre. This report—which is still restricted—suggests that the European Translations Centre should be located in a national centre and should be responsible for the bibliographic control of the translations, i.e. the cataloguing and supply of translations. One of the recommendations is that a teleprinter service be established between the proposed centre and the various national centres, and this, I think, highlights the need for speed which is so paramount in procuring translations, especially in industrial organizations. The problem of depositing translations in a centre has not been discussed here, but it is interesting to note that half of the forty-two translation pools hold copies of at least some of the translations indexed.

To summarize briefly: I believe that the main lessons to be learned from abroad are: 1. the setting up of real national centres, similar to that in East Germany; it seems that multiplicity of translation centres such as exists in this country—shown by the papers this morning—or in France or in the United States, leads to a success ratio which does not come up to that of the East German figure of 33 per cent, and I think that these ratios are as good a standard for success as any; 2. the use of some sort of mechanical indexing devices by which translations can be traced from incomplete data and also by subject; 3. connection to national or international Telex or teleprinter services, which would increase the speed and reduce the cost of consultation compared with conventional postal communication and telephone; and 4. that the centre should also hold copies of the translations.

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THE BENEFITS OF CO-OPERATION

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Conference on Technical Translation, London, 15th January 1960

IN opening this afternoon session, I feel rather like the London business man who, shortly before Christmas, had had a serious argument with the 'ghost' writer he employed to prepare his speeches. He was to deliver a speech at a City function of some importance, and, having duly received his notes—which, as usual, he had no time to read—went off to the dinner. When called upon to deliver his speech he rose and began 'Mr Chairman, ladies and gentlemen. The world today is full of problems. There are grave international problems, social problems, industrial and trade union problems, and many similar and equally serious difficulties. With your permission, I should like to deal with some of these problems in detail tonight.' Here, having reached the end of his first page, he turned it over, only to find scrawled across the next, otherwise blank sheet, the words 'Now talk yourself out of that one!'

A number of points were raised by various speakers this morning and I should like to comment on some of them. Mr Patrick, in his interesting paper on the inquiry system initiated by him, underlined the fact that existing central indexes of translations had not proved very helpful hitherto. There have, I think, been two principal reasons why such indexes have proved unsatisfactory. Firstly, there has been the difficulty, which I personally believe to be an imaginary one in the majority of cases, that certain firms or organizations are unwilling to declare their interest in a given subject. In organizations where the majority of translations are made from published articles in technical or scientific periodicals, this objection can hardly be maintained; I have yet to hear of such an organization refusing to disclose that it subscribes to a given journal on the grounds that it might reveal its interest in a certain subject.

The second major reason is, at least as far as our own industry is concerned, that such cumulative indexes as exist are out of date to a very considerable extent. This is, of course, quite understandable in view of the immense bulk of material to be handled; nevertheless, it is a very real cause of trouble.

It seems quite clear that we need to answer two questions before proceeding with any translation asked for. These are:

1. Does anyone propose to translate this paper, or have they already begun to do so?
2. Does a finished translation of this paper exist, and, if so, where?

Clearly, the first question will apply largely to recent journals and publications, but it is precisely this fact which makes the question so important in dealing with the day-to-day requests for such papers which are the concern of translation or information services. The second question will equally obviously apply, as a general rule, to the older publications.

It would therefore seem that we need two streams of information: firstly, to answer question 1, a series of 'notices of intent to translate', and secondly, to answer question 2, a series of 'records of existing translations'. So far as I am aware, most of the cumulative indexes which have been tried only answer question 2; this is the case, for instance, with the Aslib index. Some exchange arrangements, such as that described by Mr Wright this morning, or our own exchange arrangements within the coal industry, give notice of 'intent to translate', but I do not think that this basis of notification is used nearly as widely as it should be.

Whether it will be possible—or even desirable—to combine the two streams of information in a central 'clearing-house', and whether in this event such a central office should be responsible for a fairly clearly defined field within one industry or cover the whole gamut of technical and scientific translations is a difficult question to decide. Personally, I feel at present that it may be more sensible and more workable to set up such central clearing-houses for a given industry or group of related industries. It should then presumably be a relatively easy matter for a central national office to co-ordinate these various group schemes by means of a central index.

Obviously, there will be difficulties, at least in the initial stages. Nevertheless, the cost of preparing technical translations of good quality and the ever-increasing bulk of material to be treated make it imperative for something practical and positive to be done before the problem reaches unmanageable proportions. I believe that we are already very near this point. Mr Reed is to deal with some of the other difficulties in the next paper and I shall therefore not say any more about them, with the exception of one somewhat delicate problem which is bound to arise when exchanges take place on the scale envisaged.

It is an undeniable fact that the quality—i.e. technical accuracy—of translations produced varies very widely from one organization to another. There may be several reasons for this: if the translated texts are only to be used by a few specialists a so-called rough translation or a crudely presented copy may be sufficient; staff translators working in certain organizations, where their needs and problems are little understood, may be unable to produce good work; or the necessity to produce a translation very quickly may have led to entrusting the work to three or four translators, each working on a part of the text. While I appreciate that there is such a thing as urgency, on occasion, this practice leads to unsatisfactory, if not shoddy, work and is to be condemned.

For one reason or another, it is therefore possible for an organization with a well-run translation office to get 'the sticky end of the deal' in an exchange, since the quality of the paper it receives in exchange is considerably below that which it offers with its own productions. This is, to a large extent, a problem which must be dealt with by the translators and by their professional organizations, in conjunction with the organizations for which they work; nevertheless, it necessarily has a not inconsiderable influence on the acceptability of an exchange and should not be underestimated.

We have heard a good deal this morning about cover-to-cover translations.

I am not in the slightest surprised to learn that they are a very expensive venture; I should have been more surprised to learn that it was not so. There are, however, two further points in connection with this method of providing translations which I would like to deal with at some length.

Firstly, I have said for a long time—and unrepentantly say again today—that I believe cover-to-cover translations to be in almost every case a wasteful means of providing what is wanted—dissipating translators' and editors' time and effort. It is very difficult to believe that all the articles in any given issue of a journal so handled are of equal interest to the relatively restricted number of subscribers. I realize, of course, that some articles would be of interest to one person or group and others to another. We must, however, all admit, if we are honest with ourselves, that there are very few technical or scientific journals which do not publish a certain proportion—some perhaps a higher proportion than others—of 'pot-boilers'.

In fact, the process of translating every article in one issue is rather like giving a marksman at Bisley a shotgun with which to pepper the target, to make sure that he hits an inner or a bull every now and then, rather than to provide him with a rifle and teach him to aim it properly. In other words, a good deal of effort is—in my own opinion, and as far as the evidence seems to go—expended on translations which are of little, if any, value. How much more satisfactory it would be if some suitable form of filtering or scrutiny were applied beforehand, to ensure that the time and labour of the already heavily loaded specialist translator (especially heavily loaded if he is a reliable one) can be turned to translating the papers which are really useful. This process could perhaps be facilitated by persuading as many periodicals and journals as possible to publish author's abstracts in three or four languages.

Secondly, it is precisely because the most reliable and accurate translators of technical and scientific literature are so much in demand that this undue insistence on cover-to-cover versions of whole journals must inevitably lead to a loss of quality, although this may of course be corrected by good sub-editing. This, in turn, means that the sub-editors will have considerable difficulty in doing their task, particularly as the work is normally required by a fixed deadline date.

There is another reason which gives me very strong misgivings about the cover-to-cover translation schemes now operating or envisaged. This is that they seem to be directed entirely at the translation of Russian literature at present. I had hoped that the germ of 'sputnikitis' would have proved to be an acute infection; unfortunately, it turns out to be chronic! I have already said on several occasions that in our own industry the Russian contributions to scientific and technical knowledge are generally speaking not as important, nor nearly as numerous, as those from Germany and other West European countries. This may not be true in some other fields, but the over-emphasis placed on Russian literature is still to be deprecated. I am quite convinced that several of the largest industries or industrial organizations represented here today would benefit very much more if, within their field of specialized interest, the availability and exchange of translations in many other languages besides Russian were properly co-ordinated and organized. It seems rather pointless to start on a new field—and to get into trouble in trying to deal with that—before clearing up one which must be at least of equal interest and of considerably longer standing.

The fact that, in general terms, co-operation is recognized as beneficial needs no emphasizing; it was Dean Swift who wrote in his journal after a stay at an inn of somewhat doubtful cleanliness: 'If the fleas had been unanimous, they would have gotten me out of bed!' Strangely enough, however, while the theoretical recognition of the advantages of co-operation can be taken for granted, it is a much more difficult thing to achieve real and helpful co-operation, especially in the field we are discussing today. If this had not been so, there would have been no need to call such a conference.

While the whole problem with which we are concerned today seems very simple when viewed superficially, it is in fact considerably complicated by the large number of points at which translations are made, by the many possible methods of sharing the cost of translations, and by the different times of exchange arrangement in operation. It seems to me that the actual advantages which can result from a well-organized system of co-operation or exchange of translations are as follows:

1. Avoidance of duplication;
2. Spreading the cost of a given translation;
3. Rapidity of procurement when a given request for a translation can be met 'from stock';
4. Availability of a translation which may be of some interest, but not of sufficient value to warrant commissioning a translation specially.

Of all the curses in—to borrow a phrase from Sir Alan Herbert—the cosmic 'mess' (he did not refer to translations, I of course do!), duplication is the worst. It is hard to think of anything more frustrating to the translator, after he has conscientiously if somewhat wearily plodded through a long treatise, say, for the sake of example, written in bad German and entitled 'A newly-discovered species of worm and its traces in the European Carboniferous', only to find at the end of his labours that someone else in another part of the country has done the same thing. Assuming that we are talking of staff translators, proper co-ordination would have made it possible for one translator to deal with the geological paper, leaving the other translator free to translate another paper of interest to both organizations. To state the problem thus may seem simple to the point of triteness, but duplication still happens far too frequently. This is frustrating to the translator, and I do not believe that a frustrated translator produces good work. Moreover, as we all know, the translation of technical literature is at best a time-consuming matter and this duplication has a high cost in wasted time and money.

A second very important consideration in connection with the benefits of co-operation is that the cost of a given translation is spread. If I may be allowed to change my hat rapidly for one moment, and speak as a practising translator rather than as the head of an office responsible for procuring translations, I would emphasize once again that translators capable of producing competent and accurate versions of foreign technical or scientific papers are relatively rare, and their services are therefore expensive. This is true whether we employ agency translators, staff translators, or some kind of co-operative scheme. The fact of the matter is that a great deal of research and time-consuming checking and rewriting is frequently needed before a really accurate and reliable translation is produced. Consequently, any means of sharing costs is a welcome suggestion.

In the context of our discussion today, the point—which I have emphasized at the risk of labouring it—is that the cost per organization participating in the co-operative scheme is much more acceptable than if the translating organization had to bear the entire charge themselves. In an organization like the National Coal Board, where we rarely issue less than thirty copies of a given translation and frequently publish as many as one hundred, the load of preparing the translation is already satisfactorily spread over this total number, and the cost per copy becomes quite reasonable. Notwithstanding this, there is still the advantage to an office like my own that the availability elsewhere of a translation we would otherwise have been called upon to do frees a translator for what may be a more urgent job. Moreover, an exchange without charge results in a sharing of cost.

The next advantage to be gained from a properly organized exchange of translations is that of rapid availability. It frequently happens that a translation of some article is required by an engineer or by a scientist as a matter of urgency; I am not referring to the very prevalent custom of asking for everything in a hurry, so as to make sure of getting something some time or other! This is, in fact, a constantly recurring problem, especially when one has to supply translations which may be used at an important committee meeting or in connection with work going on in a Research Institute. Dealing with a number of requests of this nature is quite a considerable physical problem, and if the papers happen to be long as well as highly technical, it is difficult on occasions to convince the research scientist or development engineer that the translation service is doing its best to meet his needs. There can be no question, in my view, that matters would be made considerably easier if some of the translations needed could be obtained 'from stock' in this way.

The fourth advantage referred to above is one which is rather more difficult to demonstrate, but must by no means be underestimated. In many fields of research and development in a given industry many translations are produced by other organizations which may contain certain information of utility to the specialist, or which may give him a general picture of a development which has an indirect bearing on his own work. Because of the indirectness of the relationship between these papers and his own special interest, the engineer or scientist would not be able to justify a firm request for the article to be translated. This frequently happens in the National Coal Board, and we are often able to satisfy the specialist by giving him a quick verbal summary of the contents of the paper. Moreover, if his attention is drawn to the existence of such a paper, translated by an organization with a much more direct interest in it, he may very well wish to have a copy for reference to the specific point which may help him, or so that he can consult the paper at a later date when it may affect his work more closely. This would seem to be a consideration which is likely to grow in importance as time goes on, because of the ever-increasing interaction of research and development in various branches of scientific and engineering work.

There is no question at all that there will be difficulties to be overcome, before we can make these advantages generally available. I sometimes think that life would be hardly worth living if there were no difficulties; in any case, anyone who prefers to live without difficulties ought not to have anything to do with translations.

Recently, to make sure that the maximum possible benefit is drawn by all the specialist staffs of the National Coal Board from the various exchange arrangements between my office and those in other organizations, we have instituted what might be called, in modern jargon, Operation 'Other People's Translations'. The method adopted is basically similar to that which Mr Wright has been running so successfully for ISI for some time past. Three headquarters' officials—the Head of the Scientific Intelligence Branch, the Technical Editor of Production Department, and the Head of the Translation Section, together with the Information Officers at each of our three Research Stations—scrutinize the lists issued by some twenty organizations who translate articles of direct or marginal interest to our scientists and engineers. The titles selected after scrutiny are sent in to my office and a monthly list compiled for distribution to all those who are likely to be interested. This scheme is only just being put into operation and it is too early to speak of results. Nevertheless, it is hoped that this will enable us to eliminate duplication far more thoroughly than hitherto, and enable us to speed up the provision of translations of any interesting articles. In almost every case, it is envisaged that exchange of copies will take place between the National Coal Board and the organizations concerned without charge. It is also expected that this scheme will provide considerable advantages under the fourth heading to which I referred earlier, namely, by drawing the attention of our specialists to the existence of translations which may be of some utility to them, but for which they would not have been able to justify a firm request.

I have tried to point out what seem to me the main benefits to be gained from co-operation. One thing is certain; we shall need to study the problem in great detail, and plan with considerable care, before we can arrive at a satisfactory and generally acceptable solution.

I am indebted to the National Coal Board for permission to read this paper; any expressions of opinion are my own, and do not necessarily represent the views of the Board.

SOME IMPEDIMENTS TO CO-OPERATION IN TRANSLATIONS: COPYRIGHT AND OTHER MATTERS

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Conference on Technical Translation, London, 15th January 1960

MY first words are apologetic: the first person singular pronoun occurs in nearly every sentence of this paper. I know that this is in bad style, but it is inevitable: I am expressing purely personal views, and these implicate in no way whatsoever the Government department that employs me.

The case for the paper is that in trying to extend co-operation we must identify any factors that our experience suggests have impeded progress, and consider how we can surmount or circumvent them. I have chosen the following four:

1. the shadow of copyright;
2. the task of making up translations for sharing;
3. the achievement of reciprocity amongst unequal co-operators;
4. getting co-operation in the face of industrial secretiveness.

Copyright looms so large in the paper that perhaps the title should have been 'Copyright' or just '1956, and all that'!

In one way or other copyright seems to fall as a shadow across the path of nearly all of us in our translations work. To some it is only a very slight one: they think the chances of trouble small. Others are less easy, whilst some say 'for goodness' sake keep off the subject in public or you may bring the house down upon us'. The back-room boys of this Conference knew that there was little prospect of the subject of copyright not arising, and it has fallen to me to 'grasp the nettle'. I am no authority on the matter and all I can promise is to give you a layman's observations.

Two preliminary points are, first, that copyright law is now both wide and involved: therefore I suggest that we confine our attention to its translations aspects: secondly, as you know, two copyrights subsist in a translation: the first is that of the owner of the original, and the second that of the owner of the translation. I propose that we consider only the first, as the second is under our own control.

A very convenient beginning is with the report of the Copyright Committee appointed by the Board of Trade in 1951. The task of this special committee was to consider whether any, and if so what, changes were desirable in the law relating to copyright in literary, dramatic, musical, and artistic work, with particular regard to technical development and to the revised International Convention signed at Brussels in 1948.

The report, published in 1952, is a highly interesting document. A number of its recommendations were adopted in the 1956 Act and it sets forth the reason for these in much detail. Paragraphs 322 and 323, as follows, seem to be of peculiar interest to us today.

> 322. It was brought to our attention that a practice has grown up, both in the United Kingdom and in other Berne Convention countries, of making translations of scientific articles, generally of current issue, for the immediate requirements of research workers and technologists, but without first having obtained the consent of the copyright owner. Such translations meet a real need and, so far as we are aware, the authors of scientific works have not felt aggrieved at this practice. If translations are not made readily available, the progress of original research and like work may be considerably delayed and reduced in value. But if they are made without first obtaining the permission of the author, copyright is infringed.
>
> 323. We would not wish in any way to suggest action that would be detrimental to the interests of authors, but the delays which occur in tracing the copyright owner and securing his consent to a translation no doubt account for the practice of making unauthorized translations, which we believe is more likely to be driven underground than to be stopped by a rigid insistence on the full rights of the copyright owner. We accordingly recommend that the next Conference of the Berne Union should be invited to give consideration to this problem and to endeavour to work out a solution which, whilst safeguarding the legitimate interests of authors, would nevertheless make it practicable and legitimate for the translations of articles on scientific subjects to be made with the least possible restriction.

Could our problem of today be any better expressed than this? These paragraphs demonstrate that the committee fully grasped the situation as well as its urgency. Perhaps, for this, it is the more disappointing that the committee seemed unable to do more than to suggest referring the problem to the Berne Union for solution. But we should not criticize: there is little doubt that the committee was very conscious that all countries in the Berne Union were deeply committed to the defence of the copyrights of each other's native authors.

What has happened to the suggestion? The answer is that such a matter required to be put to a full conference of the Union, of which there has been none since 1948. There is likely to be one in 1964 at Stockholm, so that sometime soon bodies interested in copyright may be asked officially for their views on any question to be raised.

It might be useful if I were to run over the salient points of the copyright position as simply and briefly as possible, even though there may be many present who know the ground already. I will do so under the following headings:

1. International copyright
2. the 1956 Act in regard to translations
3. the attitude of the copyright owner

It is possible that, from our point of view, the key matter is 3.

General international collaboration on copyright began with the meeting together at Berne in 1885 of some eleven powers which included the United

Kingdom and seven other European countries; amongst the non-participants were Russia, Holland, and the USA. The result of the meeting was the Berne Convention of 1887. This agreed on desirable principles of copyright law to be embodied by countries in their domestic law, and it established a Union of powers, which is still in existence.

The basis of the Convention was that each signatory would give the defence of its own law to the copyright of the nationals of every other. This meant, for instance, that our own copyright law could be invoked in a United Kingdom court by a national of any other country in the Union, and so on.

Countries not interrelated through the Union were of course not disturbed from doing as they pleased with the copyrights of other countries. Russia has never entered the Union, consequently we may do precisely what we please with original material published in Russia and conversely the Russians may do the same with ours. So far the Russians have shown no sign of intending to subscribe to the convention.

Since 1887 copyright law has had to be widened enormously because of developments in photography, cinematography, television, sound recording, and broadcasting. Hence further conferences have been held in Paris (1896), Berlin (1908), Berne (1914), Rome (1928), and finally in Brussels (1948).

In 1952 a new international group met in Geneva under the aegis of Unesco to try to bridge between the Berne powers and others who could not, or would not, join them (the latter included the USA and other pan-American powers but still not Russia). The meeting agreed to the Universal Copyright Convention, and Article XVII of this runs as follows:

'This Convention shall not in any way affect the provisions of the Berne Convention . . . or membership of the Union created by that Convention.' The Universal, in general, does not go as far as the Berne, but both are very specific on translations:

Berne (Article 8): 'Authors of literary and artistic works protected by this Convention shall have the exclusive right of making and of authorizing the translation of their works throughout the term of protection of their rights in the original works.'

Universal (Article V): 'Copyright shall include the exclusive right of the author to make, publish and authorize the making and publications of translations of works protected under this Convention.' [The author loses this right if he does not publish a translation within seven years.]

Neither Convention is actually British domestic law, but the 1956 Act was drafted in close relation to the text of both, although the Universal was not actually ratified by the United Kingdom until 1957, a year later.

The respective membership of the two Conventions as they stood at the end of 1957 are stated in the Copyright (International Conventions) Order, 1957 (Statutory Instrument 1957 : No. 1523). It is interesting to note that Poland, Hungary, and Czechoslovakia are all three members of the Berne Union although Russia and the East German Republic are not. [How would matters stand if the Russians were to be accepted by either of the international copyright unions? This is a question very often asked. The answer is that they could not be accepted unless they agreed to bring their own law into line with either

Convention. In the case of translations this would necessitate a major change of domestic policy on their part because under Russian law the author has no rights over the translation of his work.]

In looking at the 1956 Act we shall find that out of its fifty-one Sections, parts only of eight are relevant to translations. Sections 1 and 2 cover the meaning and ownership of copyright; 6 covers 'fair dealing'; 7, the copying of periodical material by authorized libraries; 17, 18 and 21 the copyright owners' remedies against infringement. Lastly, Section 36 covers assignment of copyright.

The more interesting passages from Sections 1 and 2 could be paraphrased as follows:

Copyright is the exclusive right to do, and to authorize other persons to do certain acts to a work in the United Kingdom or in any other country to which the Act applies (Section 1, Subs. 1). Subject to provisions in the Act (for example, those covering fair dealing) copyright is infringed by any person, not the owner of the work (nor licensed by him), who does or authorizes another to do any of the restricted acts (Section 1, Subs. 2), which include reproducing, publishing (Section 2, Subs. 5), or making an adaptation or reproducing or publishing that. An 'adaptation' means a dramatic version of a non-dramatic work, or the reverse; or a pictorial version of either; or a *translated version*.

This seems to be a fairly 'burglar-proof' protection for the rights of the owner. But there is one chink—and users should be very thankful for it. This is Section 6—'General exceptions from protection'. The first three subsections of this Section cover 'fair dealing'. Users should, indeed, be extremely thankful for this, because the idea of fair dealing for purposes of research and private study is no part of either of the international conventions.

It is important to note *how* the Act treats 'fair dealing'. It states that no fair dealing with a work for purposes X, Y or Z shall constitute infringement of copyright: X, Y and Z, of course, are, 'research or private study' (SS. 1); 'criticism or review' (SS. 2); and 'reporting current events' (SS. 3). The Act, however, does not define actions of fair dealing, so that although we can speak of the right to do things if they are fair, whether in fact they are so can be decided, ultimately, only by a court of law. The Copyright Committee, in stating that translation without consent of the owner infringed copyright, did not suggest that in no circumstances was this likely to be accepted by a court as fair dealing. I cannot believe that if, for purposes of research, I have an article in a language that I cannot read translated into one that I can, this could be regarded as unfair dealing: I cannot believe that author's consent is really necessary. But when it comes to making copies in number the situation is rather different.

So far as we know, there have been no court decisions specifically on translations. There have, however, been cases in other fields of copyright that give some guidance as to what would be held to be fair. For instance, in a case in 1916 the judge spoke of 'the necessity of establishing that the alleged piracy is calculated to prejudice the sale, diminish the profits or supersede the objects of the original work'. Skone Jones, a well-known authority on copyright, has suggested that dealing will be unfair only if it competes with the original. G. Woledge cites these and other instances in his 1958 paper on copyright (*J. Doc.*, 1958, vol. 14, p. 51) and his final words on the matter are: 'The courts seem in fact to have been guided by what seems in itself the reasonable principle that what is unfair is commercial exploitation and that anything else is fair'.

Section 7 provides that there is no infringement if a copy of an article in a periodical publication is made or supplied by or for a librarian of a library in a class prescribed, and in accordance with regulations prescribed, by the Board of Trade. Presumably, for purposes of photocopying, an *authorized* translation would be treated by these libraries in the same way as the original, but it is not clear than an *unauthorized* translation would be so treated because, legally, it is an infringing copy. This is an important point that deserves exploration.

Section 15 establishes a copyright in the typography of a publication. This resides in the publisher and is the only one that does so automatically. It is relevant principally to photocopying, but since some misunderstanding can arise from it in some circumstances of our business with publishers over translations, I shall refer to it again.

Sections 18, 19 and 21 lay down the remedies of an aggrieved owner which are several. He may, by civil proceedings, secure, on proof, an injunction, confiscation or damages or a mixture. To obtain an injunction the plaintiff has no need to prove that there has been actual damage, but he must show that there is probability of damage and that the defendant is likely to continue his infringement, and that this is not simply trivial. It appears that one judgment does not protect the owner against infringement of his right in the same article by another person, nor of his right in another article, by the same person. Alternatively to civil proceedings, an owner can, under Section 21, cause summary criminal proceedings to be taken against actions with infringing copies, such as: making for sale or hire, selling or letting for hire, distributing for purposes of trade, or for other purposes but to such an extent as to affect prejudicially the owner of the copyright (Section 21, Subs. 1 and 2).

(Incidentally, I gather that the introduction of summary procedure into the 1911 Act was designed particularly to meet wholesale piracy in popular songs!)

We can see for ourselves what the law says, and it is quite important that we should do so, notwithstanding the naïve thought in some quarters that the law of copyright may be either dying or dead. We can only guess what the courts are likely to judge. But is not the primary question, 'What will owners be inclined to do about infringement?' After all, we shall not hear anything at all of the law unless the owner pursues.

The copyright owner may be the author of the paper or he may be the publisher. His attitude to infringement is likely to depend a little upon which he is. It may be useful to note here that the first owner of all rights in a paper is the author, and that none of those rights leaves him unless he deliberately assigns, say, to a publisher. Secondly, according to Section 36, assignment does not necessarily cover all aspects of the copyright unless it is expressly in the arrangement; thus translating rights, for example, may remain with the author.

What attitude towards infringement should we expect of an author-owner? The Copyright Committee commented that 'so far as they were aware' the authors of scientific papers had not felt aggrieved at the practice of others making unauthorized translations of these papers for the immediate needs of research workers and technologists.

Our own experience would not conflict with this finding, but this is not a conclusive position because, by the nature of the operation, probably very few authors become aware of unauthorized translation of their work. In the end, we have to reason out our own appraisal. My own, for what it may be worth, is as follows.

1. One can assume that, if authors go to the trouble of publishing, they will welcome further advertisement of their work;

2. If an author's work is maltranslated he is likely to object, because this may injure his reputation.

3. If an author's work is exploited for profit he will naturally be offended.

4. A translation carries the name of the original author with it wherever it goes, so that, in general, authors will like to be consulted when their work is being translated for any kind of general circulation.

My guess as to the attitude of a publisher-owner is that it will differ from that of the author mainly in emphasis. He will welcome extra publicity for his journal but this extra publicity will be less valuable to him than the extra publicity of the paper will be to its author. Maltranslation is less likely to injure the reputation of the journal than of the author. The publisher will be more sensitive to anything resembling trading because the emphasis of his life is upon keeping his journal alive: he will object to actual or prospective loss of revenue and will resent missing extra revenue that he thinks should fairly come his way.

However, the degree of infringement necessary to spur an owner of any kind to legal action must be fairly high because of the trouble that such action would normally involve: very little litigation is devoid of hazard and cost, and to pursue in a foreign court of law must be most troublesome. By and large litigation does not seem likely unless negotiation has failed and some matter of real significance is involved. Reasonable conduct on our part should exclude the possibility. But, of course, the question then arises 'What is reasonable conduct?' I have no qualification for giving an authoritative answer, but I will indicate courses that I would regard as reasonable, and would be inclined to follow.

1. When it was clear that my organization, for immediate purposes of research, needed to have an item in a currently published technical journal translated, I would arrange for that, *without* first obtaining owner's consent.

2. If I intended making two or more copies, however, I would consider that there was a prima facie case for consulting the owner about that, although if no more than a handful of copies were required I would not think it essential to consult him. I would, however, see that all the copies made were marked 'not for publication'. I would not refuse to lend outside if asked, but would not donate or sell. Later on, when internal calls had subsided, I might agree to make a long-term loan to a suitable public library for relending. There is nothing in the Act against *lending* an infringing copy and I do not consider that a public library would refuse to lend.

3. If I proposed making larger numbers, I would certainly wish to consult the owner; I would set out very definitely to do this if sale or extensive donation of copies or, of course, publication were envisaged.

Following on from the last point, approaching the owner is something that a great many of us are reluctant to do. This is not so much because we dislike the effort as it is that we fear awkward consequences; we visualize, for instance, sometimes finding ourselves having to meet burdensome conditions—financial and/or otherwise. There is no doubt that some people who have done it have felt themselves bitten. Be that as it may, I know of one non-profit-making association that, for several years past, has been approaching the owner in every case, and does not feel that it has in fact ever been bitten. There may, I suggest, be something in the terms in which approaches are made. How to approach owners is another matter that deserves exploration.

If we go to the owner we should see that we go to the right one, that is to say the one who *owns the translating rights*. As I said earlier, these rights may still be with the author. If we approach the publisher we do not naïvely ask him whether he owns the *copyright*: he is likely to say yes, because he will, in fact, own the copyright in the typography. We should ask him whether he holds the translating rights. If we prefer, we may ask him for the author's address and then take the matter up with the author first. That is the course I would personally prefer.

The request to the owner should be for consent to *our making translated copies and doing certain things with them*. We should not, I consider, ask if we may translate, for to do that would appear to be relinquishing our right to do what is fair for a purpose approved by the law. I do not think we should anticipate a flat refusal unless the owner has the intention of arranging the preparation and publication of a translation of his own. We might, however, be given conditional consent, and we might think the conditions unreasonable. We ought not to regard as unreasonable a request by the owner to see and vet the translation. This might in fact be so useful to us that we would gladly compensate him in some way for his service. The conditions that we might think unreasonable are more likely to be financial.

Here I would say that the development of any widespread practice of royalty payment to authors in connection with the translation of currently published scientific papers would be most regrettable. It would seem to foul the whole spirit of scientific communication, and I am sure that a great many authors would hold the same view. The position in the case of journals asking for royalty (i.e. if they hold the rights) may be slightly different. Even so the terms in the case of current scientific papers should surely be lower than almost anything else in royalty rates.

I want finally on the question of copyright to return to the suggestion by the Copyright Committee that our problems should be referred to the Berne Union. With due deference to the committee I greatly doubt whether this is the wise or promising thing to do: we might get quite the wrong result! The Berne Union according to Article 1 of the Convention is for the 'protection of the rights of Authors over their literary and artistic work': it has no avowed function for helping the user. In any case, this line of approach presupposes that the law needs altering, whereas what may really be needed is agreement between interested parties upon what all could accept as fair dealing. Anything to be done internationally, I consider, would best be done in the direction of Unesco or FID. After all, the object would be to help international exchange of scientific information and this promises to be more effectively done by promoting amongst authors and publishers the most liberal attitude possible towards those who want to translate for use, than by tinkering with copyright law, whether international or national.

The attention I have felt obliged to give to copyright (and even so, I have not fully covered it) has left me very little time in which to cover the other 'impediments'. They are not unimportant, since they may all have bearing upon improved practical arrangements by which co-operation can take place. I can at least ensure that they are not left out of the picture.

Making up of translations in suitable form for loan may sound rather minor; it can, however, be quite a troublesome matter, especially with papers that are highly mathematical or generously figured. The large organization can take the work in its stride; many small organizations have comparatively few facilities and in some cases they avoid complete make up, and just attach a copy of the original paper to a translated text that omits the mathematical or diagrammed details. This serves internal purposes reasonably well, but I suspect that many organizations would dislike lending material in this unfinished form.

Many different ways are used in making up translations. It would be very useful if information about them could be assembled and perhaps some recommended procedures reached. I am personally interested at the moment in the possibilities of microfilm in both making up and lending translations. Unfortunately, if you need to go outside your own organization to have a microfilm made, and the translation is unauthorized, you will find no commercial supplier who is willing to break the law for your sake! Incidentally, lending a photostat negative is unwise, since it undoubtedly ranks as a 'plate'.

The next question concerns *reciprocity*. Just how unequal can contributions be amongst co-operators without their association falling apart? We find great variety in size and resources of unit: there are the 'big boys'—some very big—and there are the 'little boys'—some very little. The big 'uns, to their credit, are mostly very generous: they need not be, but they are. There would, of course, be no problem of achieving good reciprocity if our activity were on a cash sale basis, but there is obvious difficulty about this if translations are unauthorized. In some way or other we must discover a way of dealing with non-contributors to any central location index and with the pestilential, 'magpie' collector.

My final item is *industrial secretiveness*. Although secretiveness over newly made translations is known to exist and has barred collaboration, the extent to which it occurs is difficult to assess. The justification given, of course, is that if firm A gives an entry to a central index and competitor B gets to know this, as he might do in the course of the co-operative processes, B may become aware of some of A's most secret thoughts. To those of us who have never lived in highly competitive areas of industry this may seem far-fetched, but I think we should respect it. At the same time we should urge any firm against becoming a nil collaborator for this reason. The problem can be lessened by introducing a reliable 'light-lock' at the index, and this has long been in vogue with the Commonwealth index at Aslib. Alternatively, A and B could contribute either selectively or with delayed action, or both. Unfortunately industrial secretiveness inevitably hampers or prevents very useful local arrangements growing up within industries.

I suggest that: we must seek to design our machinery of co-operation so that every beneficiary is, in some way, also a benefactor; we must try hard to solve the problem arising from industrial secrecy; we must try to find simple ways of making up translations into viable form because difficulty here may often, in the case of the smaller organizations, just tip the scale from co-operation to non-co-operation.

I propose to end on 'copyright' because it appears to me that if our situation here were easier and clearer our problems of co-operation would be tremendously reduced. I think we should explore the possibility of more frequent recourse to owners. The unauthorized translation is a child born out of wedlock, and it suffers from that birth. For instance, commercial copying agencies will not handle it and prescribed libraries will probably not be at all easy about making under Section 7, copies of what is an 'infringing copy'. It might be well worth while considering the establishment of some focal point at which experience of owner approach could be accumulated and advice given.

DISCUSSION

The need to improve the coverage of the Commonwealth Translations Index, kept by Aslib in the United Kingdom, came under fire during discussion. It was pointed out that it was impossible to make the index comprehensive until all translators could be persuaded to co-operate in notifying translations, and it was suggested that more organizations might be prepared to notify translations on condition that their own identity was not divulged. Notification of prospective translations and translations in progress was suggested, but this practice could lead to disappointment where the work was not completed. An additional index of requests was proposed by Aslib in order that inquirers might be put in touch with others seeking the same material.

It was pointed out, in favour of decentralization of translation services through research associations, that translation was not an end in itself and that the Research Associations were sometimes in a position to supply the material in another form, and that they had facilities for dissemination and indexing.

Inclusion in the Commonwealth Index of long summaries or abstracts of translations was advocated as valuable in showing inquirers whether or not the material was really what they were seeking. Some Russian journals contained abstracts in English, but these were often unsatisfactory. The translations from *Referativny Zhurnal,* obtainable from LLU, were useful in giving an insight into available material in the Russian press.

In answer to questions Mr Liebesny said that the United States Office of Technical Services (OTS) issued abstracts of articles in Russian periodicals if no cover-to-cover translation was made. As far as he knew, Unesco did not do cover-to-cover translations; it listed translations of books but not periodical articles in *Index Translationum.** A number of English journals, including *Nature* and *Engineering,* were translated cover-to-cover in the USSR. Selected articles only from *Atomnaya Energiya* were published in this country and in the United States by Pergamon Press in the *Journal of Nuclear Energy,* but cover-to-cover translations of the Russian patents journal *Biulletin Izobretenii* were issued in this country by at least three publishers (see *Aslib proceedings,* vol. 11, no. 6, pp. 145–6).

Mr Hill said that LLU was co-operating with the USA in cover-to-cover translation and was trying to bring in other European countries who preferred material in English rather than Russian. At present Canada and Scandinavia were each covering one journal in English, and France one in French. East Germany published translations in existing journals rather than as special cover-to-cover issues. LLU records of translation inquiries showed 46 per cent success including, and 17 per cent excluding, cover-to-cover translations. Some inquirers asked for material in its original language, but if the requests mentioned translations these were supplied if available. Cover-to-cover translations were generally paid for at about 25*s.* per page, but other work might be a little more expensive.

Speakers were not in favour of the practice adopted by the Optical Society of America of compulsory inclusion of subscriptions to its own journal with those for translations (see *Aslib proceedings,* vol. 12, no. 1, p. 6).

* *Index Translatonium,* vol. 10, Unesco, 1959.

TECHNICAL TRANSLATION CONFERENCE

CHAIRMAN'S SUMMARY

In summing up the proceedings, Mr Donald Hicks (Carbonization and Scientific Director, East Midlands Division, National Coal Board) first reminded the conference that the purpose was to provide opportunity for discussion of the benefits of co-operative action in the field of technical translations with the object of making specific proposals for early action in improving and developing present schemes. The organizers had deliberately avoided promoting discussions on translating technique or any assessment of why and how translations were asked for. However, in any final assessment of the size and nature of the problem of providing an adequate and economical translation service some quantitative appraisal of the demand and its motivation would be necessary.

Many conflicting views were expressed both by some of the authors of the papers and in contributions to the discussion, and clearly these differences could not be resolved in a conference of this nature.

Mr Hicks dealt briefly with two examples of opposing views. Mr Hill had described the efforts of DSIR in collaboration with certain Research Associations to provide English texts of foreign periodicals. Mr Hill was careful to point out that this was an experiment and its success would have to be judged by the reception and use that was made of these cover-to-cover translations. One speaker condemned this method of dealing with translation as wasteful and expensive. Mr Hicks said that he thought that it would be wiser to await the results of DSIR's work in this connection rather than to judge it on some theoretical grounds. The second example quoted by Mr Hicks to illustrate the cleavage of views was that one of the authors favoured national translation centres with active international co-operation, whereas in the discussion other speakers had favoured a large measure of decentralization, with one contributor emphasizing the merits of the Research Associations as the ideal focus for co-operative action in this field of endeavour.

The balance of views seem to favour the procedure of each industry dealing with its main subject in some co-operative manner, and undoubtedly the best example given to the conference was the description of BISITS by Mr Martin Wright, Secretary of the Translation Service of the Iron and Steel Institute. Not only was this a good example of co-operative action on an industry basis but there was also a clearly understood business arrangement which allowed the service to be solvent financially. Mr Hicks commended these arrangements to the conference and thought they could be extended greatly. Even so, a number of speakers pointed out that industries generally had many common interests as, for example, in health, safety, welfare, manpower recruitment and training, costing and the like, not to mention a common interest in the advances of pure and applied science in the wider context. And this led naturally to the importance of a unified index of translations and Aslib's part in the scheme of things, which it was generally admitted could and should be improved.

Mr Reed in his paper had dealt with some of the impediments to co-operation and particularly highlighted the problems associated with copyright. Other speakers in similar vein had referred to the burden of translation falling on the few and the resulting unequal co-operation and the assumed stumbling block to full co-operation because of the reluctance of some industries to declare their interests in certain subjects. None of these impediments appeared to impress the conference as major handicaps in achieving a much better state of affairs than now obtained.

In concluding his general review of the conference Mr Hicks said that he was a little surprised that more was not done in the way of distributing widely the translation of titles and in a more selective way the translation of authors' summaries. It seemed to him that the whole problem would be greatly eased if in each country there grew up the practice of publishing the author's summary in two or three languages additionally to the native language. If some of the leading societies and institutes in this country could be persuaded to do this it would set an example to other countries which, if they followed it, would be greatly to our benefit.

The overriding conclusion of the conference was that the present situation was unsatisfactory, but before an economical solution could be proposed it was necessary to make a precise and quantitative assessment of each aspect of the problem, taking into consideration not only the interests of industry and the Research Associations but also the needs of the universities and learned societies. No worthwhile solution would emerge until resources and costs and some estimate of benefits were also considered. This sort of comprehensive study fitted in with the suggestion of one speaker that what was needed was an operational research study of the whole problem.

It seemed therefore that the three main conclusions of the conference were:

1. The present situation was unsatisfactory but the procedures adopted by the iron and steel industry as described by Mr Wright could be widely commended.
2. Aslib should give close attention immediately to its own practices and resources with a view to improving them.
3. Aslib should, in co-operation with other organizations, sponsor an operational research study of the whole subject, and industry, DSIR and other interested bodies should provide the necessary finances for this to be done.

DIRECTOR'S CLOSING COMMENTS

In closing the conference the Director said that four suggestions concerning the Commonwealth Index, at least as regards practice in the United Kingdom, would be considered as a matter of urgency.

They were:

The possibility of systematically including translations in preparation.

The possibility of including long English summaries and, perhaps, translations of authors' abstracts.

The desirability of encouraging co-operating organizations to deposit with Aslib actual copies of translations for loan purposes, though he thought that a deposit system might defeat the object of the index.

And finally, the most effective ways of increasing the number of co-operating organizations and of ensuring that all such organizations notified all their translations promptly.

He was himself already convinced that the most effective way to deal with the problem of translation in the United Kingdom was to decentralize the work of translating, possibly through Research Associations or learned societies in each subject field or industry, and at the same time to centralize information services concerning the existence of translations in the Commonwealth Index.

Translations made in the Commonwealth should be covered by the Commonwealth Index, those made in the United States should be covered by the OTS and SLA scheme, and those made in the Western European countries, other than the United Kingdom, should be covered by the proposed EPA scheme. In this way each of the three schemes of interest to the Western world would be kept within manageable bounds and an inquirer would need to make only one inquiry in triplicate on each occasion. Any attempt to make each of these three schemes cover comprehensively the Commonwealth, the United States, and Western Europe was doomed to failure, if only because of the enormous amount of material which would eventually be involved.

There were, however, still numerous problems connected with translation on which inadequate data were available and he welcomed the suggestion for an inquiry on operational research lines. The possibility of fitting some such inquiry into the Aslib Research Programme would be studied as a matter of urgency.

THE BRITISH INSTITUTE OF RECORDED SOUND

REPORT BY JAMES J. EATON

Aslib Representative[*]

DURING the past two years—and particularly in recent months—the British Institute of Recorded Sound has made considerable progress, both in the expansion of its archive collection, which now contains some 48,000 discs and 300 tapes, and in the rapidly expanding use by students of the listening facilities which it provides. The general public, too, is becoming increasingly aware of the Institute's existence and of its authoritative standing, as is evidenced by the many requests received for information on all aspects of recorded sound.

Through the generosity of private individuals, as in the past, as well as of public libraries and other institutions throughout the country, gifts of records have proved a valuable addition to the Institute's collection. In 1959 the rate of intake was about 1,000 discs a month—an encouraging figure—but a number of these are used copies, and, as the Chairman of the Executive Committee has pointed out, 'it would of course be a considerable advantage if—in the case of current issues—new rather than used copies could be added to the archive. It is much to be hoped that government action and the goodwill of the producers of records will in the not too far distant future make it possible for the Institute to acquire as they are issued the majority of the more important records produced in this country. At present purchase tax is payable on records given by the manufacturers.'

One point should be made clear: that the Institute is not, as many people still suppose, mainly a collection of records of classical music; its aim is to form a fully comprehensive collection to include valuable sound recordings of all kinds. For instance, a very extensive collection of recorded literature and drama, including records in many languages, has been accumulated, largely with the help of special grants from the Arts Council. Copies of many of the tape recordings made by the British Council of British poets reading their own works have also been acquired.

During his visit to this country last summer Mr Percy Grainger presented to the Institute a complete set (on discs) of his own recordings of folk music made early in the century on cylinders in the British Isles, Denmark, and New Zealand. With these records are a manuscript text and score annotated by Mr Grainger himself—the whole forming a gift of unique importance. The International Library of African Music has also contributed about a hundred long-playing records of African folk music collected under the supervision of Hugh Tracey; and the Institute's collection of overseas folk music has been further augmented

[*] A previous report will be found in *Aslib proceedings*, vol. 9, no. 3, 1957, pp. 80–2.

through other donations. Another noteworthy gift of great value has been forty-five long-playing records of the music of Belgium ranging from César Franck and Lekeu to the present time, presented by the Belgian Government.

It will thus be seen that the building up of the Institute's archive from various sources is proceeding satisfactorily, though there is much scope for its further expansion.

The activities of the Institute have not been confined, however, to the accumulation of its stock of records; the value of its services was signally recognized by the part taken in the Purcell and Handel Festival in the summer of 1959, when it organized nine lunch-time lectures in collaboration with the Festival Committee. Another valuable service has been inaugurated, in co-operation with the London University Department of Extra-Mural Studies—to which the Institute has owed so much in the past—in the course, spread over four years, leading to the new External Diploma in the History of Music. The lecturer is Mr Anthony Milner, and the Institute is the only centre in the London area at which a course leading to the diploma is being held.

In order to make the existence of the Institute more widely known at home and abroad broadcasts were delivered during the past year in this country, Switzerland, and Germany explaining to our own and the European public the Institute's general aims and needs. Further, the Secretary of the Institute addressed the conference of the Galpin Society and the International Association of Music Libraries, held at Cambridge last July, on 'Some problems in the preservation of valuable sounds'. During this conference useful contacts were made with other archives at home and overseas.

The continued support accorded to the Institute by the Arts Council, the London County Council, the Pilgrim Trust, and the Sir Ernest Cassel Educational Trust during the past year is gratefully acknowledged, for without their help and that of the Friends of the Institute its continuing existence would certainly be impossible.

The standing and prospects of the Institute have notably improved, and it is hoped that the sympathetic understanding of its case which is now becoming more general will in due course be translated into concrete terms. To this end the assistance of Aslib, one of the original sponsors of the Institute, may, I feel sure, be counted upon in every way possible.

JAMES J. EATON,

Aslib Representative on the BIRS Executive Committee and Council.

31st January, 1960.

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ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

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Wanted

Iron & Steel Directory, 7th ed. *Jute Canvas & Cordage Yearbook,* 1955. M. Gordon, Brown Knight & Truscott Ltd, Dowgate Works, Tonbridge, Kent.

Volumes 1, 5, 6, 7, 8, and 25 of SACCARDO, *Sylloge Fungorum* are needed by a research worker of the Instituto de Investigação Cientifica de Angola, Caixa Postal 3244, Luanda, Angola.

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 May 1960 **Number 5**

ASLIB CALENDAR

MAY

WEDNESDAY 25th. Film Production Librarians Group Annual General Meeting.

TUESDAY 31st. Annual General Meeting of Aslib.

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

Research Department

Most of the major research projects to be carried out by Aslib in accordance with its programme will necessarily take the best part of a year to complete, and some of them longer. In the interval between the start of work on a project and the final publication of results, members, particularly when they have themselves co-operated directly in an investigation by providing data, may well wish to know what progress is being made. For this reason brief notes about current research work will be published in *Aslib Proceedings* at intervals. They may include reports on minor *ad hoc* investigations the results of which are not to be fully reported elsewhere.

Survey of Information/Library Units

The fifty-two industrial and commercial organizations which, some time ago, provided Dr D. J. Campbell (then Assistant Director) with a great deal of factual information about their libraries and information sections will be glad to hear that a full report of his survey has now been prepared and is about to be published by Aslib as a booklet. The report provides a semi-quantitative picture of the holdings, staff, costs, operations, methods, and use of industrial and commercial libraries in this country, which has been lacking hitherto. It should be of interest to most special librarians and information officers, to managements considering the establishment or expansion of special libraries, and to publishers and suppliers of library materials.

Inter-library borrowing

Thanks are due to the 230 members who have provided usable information for the first stage of this investigation. This is nearly 80 per cent. of the random sample to which questionnaires were sent. Over sixty other members, approached because they were known to be large borrowers, also completed returns. The first stage of the investigation is designed primarily to reveal the scale and pattern of inter-library borrowing by special libraries, and to provide realistic data on which to base plans for the second stage, during which detailed times and costs will be obtained. Preliminary analysis of the first stage results shows that the organizations in the sample borrowed a total of about fifty thousand items a year from the other libraries. The sample comprised about one-fifth of the Aslib membership (excluding overseas and personal members, public libraries, and a few others), so that the total borrowing of the United Kingdom special libraries which are members of Aslib may well be of the order of a quarter of a million items a year. An operation conducted on this large scale clearly justifies study.

Other preliminary results which may be of interest are: 170 libraries, asked to list in order the three sources from which they borrowed most, named a hundred different libraries—local public libraries being counted as one. Fifty libraries were named as the biggest lenders. Borrowing, therefore, is by no means concentrated upon just a few sources, although, as might be expected, the Science Library (taken together with the Lending Library Unit of DSIR) was mentioned most frequently as a source of loans.

Each library in the sample was asked to give exact dates for its last completed borrowing transaction. The results showed that one-third of the items borrowed were received by the borrowing library within four days of the date of the first request. One-third took more than nine days, and of these approximately 2½ per cent. took thirty days or more. (The days of request and receipt, and Saturdays and Sundays, are included in these figures.) The second stage of the investigation will show, among other things, how far these times differ according to the type of document borrowed and the library lending it.

Proceedings of International Conference on Scientfic Information

The proceedings of the International Conference on Scientific Information held in Washington from 16th to 21st November 1958, have now been published and are available from the Printing and Publishing Office, National Academy of Sciences–National Research Council, 2101 Constitution Avenue, Washington 25, DC. The price is $20 per two-volume set to non-registrants at the conference, $12 to official conference registrants, and Unesco coupons will be accepted in payment.

At the time of writing, a set has not yet been received in the Aslib library. However, as the result of a generous response from the authors of papers presented at the conference, a number of individual preprints have been received and are available on loan to members. These are listed on pages 209–10, in place of the usual section on 'Selections from the recent literature'.

ASLIB INFORMATION

Midlands Branch

At the Annual General Meeting, held in Birmingham on 23rd March, the following officers were elected for the coming year: Chairman, Mr J. H. Bennitt, individual member; Vice-Chairman, Mr B. M. Bland, University of Birmingham; Hon. Secretary, Mr E. H. C. Driver, College of Advanced Technology, Birmingham; and Hon. Treasurer, Mr D. R. C. Whale, Tube Investments Ltd.

After the business of the meeting had been concluded, Mr A. G. Kay, Development Department, ICI (Hyde) Ltd, gave an interesting talk on patents, referring particularly to special library work.

Northern Branch

Thirty-eight delegates attended the Annual General Meeting, held in Manchester on 25th March. The following officers were elected for the coming year: Chairman, Mr G. H. Davison, United Steel Companies Ltd, Rotherham; Vice-Chairman, Mr J. E. Bolton-Allen, Automatic Telephone & Cables Ltd, Liverpool; Hon. Treasurer, Mr F. Newby, Hardman & Holden Ltd, Manchester; and Hon. Secretary, Miss E. Boddy, Edgar Allen & Co. Ltd, Sheffield.

Film Production Librarians Group

On Wednesday 23rd March Mr John Trevelyan, Secretary of the British Board of Film Censors, gave an interesting and lively talk to members of the group on the work of the Board. After outlining its history and how it came into being, he dealt with some of the day-to-day problems with which it is faced and how they are solved. Flexibility is probably the most valuable asset, as it enables the Board to keep abreast of public opinion and sometimes even ahead of it—unlike its American counterpart, with a rigid set of rules which, producers have complained, virtually write the scripts for them. Members felt that the small company of men and women composing the Board were doing a difficult job very well and those present wished that the talk could have been longer.

National Central Library Telex

The National Central Library has recently installed Telex (Telex no. 25816, call sign NAT CEN LIB LDN). It is hoped to explore its potentialities for inter-library lending, both through a Region (Manchester Public Library's Telex installation will be available for use by the North-Western Regional Library System) and by direct contact with those libraries already borrowing through NCL.

Libraries will be able to transmit urgent requests for loans or information during the time the library building is open (8 am–6 pm Mondays to Fridays). Any message requiring an immediate answer can, however, only be dealt with between 9.15 am and 5.30 pm; those received before 9.15 am or after 5.30 pm will be dealt with as soon as professional staff are on duty. Libraries sending in requests in this way should also send in the usual application form by post as confirmation and for the records of the NCL.

Public libraries that are on the Telex network may, if they feel that the urgency of the request justifies doing so, apply direct to the NCL, but in other cases the request should go through the usual channels particularly if the Regional Headquarters concerned is on Telex.

Royal Institution of Great Britain Library

The managers of the Royal Institution wish it to be known that the Institution's library is open for purposes of study to persons who are not members of the Institution. Admission to the library is by means of reader's tickets, for which no charge is made. Holders of such tickets may use the library for reference purposes only; they are not entitled to borrow books. Applications for reader's tickets should be made on a form obtainable from the Secretary. Applicants, who must be over 18 years of age, must be sponsored by responsible persons to whom they are personally known. Full details are included on the form of application.

Information about the library and its contents may be obtained from the Secretary or Librarian of the Royal Institution, 21 Albemarle Street, London, W.1.

FID Conference

The 26th Conference of the Fédération Internationale de Documentation (FID) will be held from 22nd to 30th July at the Naval College at Rio de Janeiro.

Subjects to be covered include national and international co-operation in the field of bibliography, improvement of collective catalogues, language problems of translation and abstracting, exchange and dissemination of scientific information, new mechanical processes, and the Universal Decimal Classification (UDC). There will also be a number of round-table sessions on such topics as information personnel and international exchange for training purposes, the special problems of scientific information work in Latin America, and standardization of documentation.

Papers presented at the Conference will be published later by the Brazilian national committee.

International Conference on Applications of Radioisotopes

An International Conference on the Use of Radioisotopes in the Physical Sciences and Industry will be held in Copenhagen from 6th to 17th September, inclusive. The Conference will be organized by the International Atomic Energy Agency in co-operation with Unesco.

Further information may be obtained, in the United Kingdom, from J. L. Putman, United Kingdom Atomic Energy Authority, Wantage Research Laboratory, AERE, Wantage, Berks; or from the Secretariat of the Conference on Use of Radioisotopes in Physical Sciences and Industry, International Atomic Energy Agency, Kärntnerring, Vienna 1, Austria.

It is reported that the proceedings of the conference will be published.

New Association for Automatic Translation

The formation of an 'Association pour l'étude et le développment de la traduction automatique et de la linguistique appliquée' (ATALA) is announced by Unesco in *Bibliographical news*, vol. 9, no. 2. The object of the association is to keep its members informed of current research in machine translation in France and elsewhere, and of the results already obtained; to co-ordinate work in this field; and to assist in research by establishment of special working parties. The address of the new association is ATALA, Ecole Pratique des Hautes Etudes, 20 Rue de la Baume, Paris 8e.

Bibliography of Microform Publications

The Council on Library Resources Inc. has announced a grant of $11,550 to the Association of Research Libraries for a 'study of the bibliographical control of microforms'. The study will be conducted by Mr Wesley Simonton, Assistant Professor of Library Science, University of Minnesota, aided by an advisory committee. It is expected to be completed by mid-September and a report will be published. The study will cover methods by which the existence of microcopies becomes known and it is hoped that the report will lead to better dissemination of this information and, indirectly, to preservation by microfilm of overlooked areas of library materials and the orderly planning of future microfilming projects.

Scientific Information Notes

Science Information News, published by the National Science Foundation, Washington, has undergone a change of title. Volume 2, no. 1, February–March 1960, is the first issue to appear under the new title of *Scientific Information Notes.* This change has been made, as stated by the Foundation in an editorial announcement, in response to suggestions that the original name was confusing and implied that the journal was a news report of science research results, whereas it deals rather with the activities involved in handling scientific information (see *Aslib Proceedings,* vol. 11, no. 6, p. 146).

Scientific Information Notes is available for an annual subscription of $1.25 in the USA or $1.75 (12*s* 6*d* approximately) abroad, from the Superintendent of Documents, US Government Printing Office, Washington 25, DC, USA.

Plastic Jackets for Filing Microfilm

Micro Methods Ltd have introduced plastic jackets of various sizes for filing microfilmed correspondence and other documents. Documents can be filmed in batches and the film cut and inserted into the jackets which may be card-index size or foolscap size, according to the requirements of the filing system used. Microfilm can be read back without removing the jackets. Further particulars can be obtained from Micro Methods Limited, of East Ardsley, Wakefield, Yorks, and 17 Denbigh Street, London, S.W.1.

Iron and Steel Index Card Service

The subscription rates for book-title cards issued by the Iron and Steel Institute were wrongly quoted in our March issue (*Aslib Proceedings,* vol. 12, no. 3, p. 88). The correct rates are £4 10*s* a year for the first set, 30*s* a year for each additional set.

Edward Gustaw Brisch

Members who knew Mr Brisch will share our regret at the news of his sudden death last month in Toledo, Ohio. Mr E. G. Brisch, M I MECH E, M I PROD E, was a recognized authority in the field of industrial classification, coding, simplification and standardization, and founder of the consultant firms of E. G. Brisch & Partners in London and Brisch Inc. in Toledo. He was a graduate–Intermediate B.Sc.(Engineering)–of the University of Warsaw and Dipl.-Ing., Mechanical Engineering, Toulouse. He came to England at the outbreak of the Second World War, when he joined the Department of Tank Design, Ministry of Supply.

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Zoological Society of London	London	G. B. Stratton

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GENERAL EDUCATION FOR APPLIED SCIENTISTS

I. F. CLARKE

Senior Lecturer in General Studies, Royal College of Science and Technology, Glasgow

Aslib Scottish Branch meeting, Edinburgh, 5th February 1960

THE danger inherent in our over-specialized system of education has now become a fashionable theme. There is already a considerable literature on the subject; and eminent figures as different as Sir Charles Snow and the Earl of Verulam have called the nation's attention to the problem. There can be no doubt about the gravity or the extent of the problem; for many would agree with Sir Charles Snow in his conviction that 'the intellectual life of western society is increasingly being split into two polar groups.'* At one pole there are the scientists whose intensely specialized education encourages them to neglect, and at times to despise, all forms of knowledge outside the strictly scientific. At the other pole is the equally dangerous specialization of the arts student whose single-minded pursuit of Eng. Lit. or Med. Hist. encourages him to ignore and belittle the great scientific achievements that have shaped the world in which he lives. Increasing specialization at an earlier age in our schools and an almost total concentration on the chosen 'subject' in the university make it possible for students to graduate without once having looked into any of the scientific discoveries of our time or once having pondered, for example, the philosophical or political ideas that have shaped our civilization.

There are many reasons for this lamentable state of affairs: the schools, the universities, the 1944 Education Act that has radically changed the pattern of university entrance, and the students themselves—all have contributed to the situation. The university, for example, too often concentrates on an exaggerated ideal of learning for learning's sake; the faculties and the departments manage to get through the sacred syllabus, especially on the arts side, without ever suggesting that the knowledge and the methodology acquired by the undergraduate will have to be applied in a world very different from the lunar calm of the lecture room. At the same time the student himself is often at fault. Born into a thoroughly materialistic world, urged on from 11 plus to university entrance by the promise of concrete rewards, he enters first year with the intention of getting himself the best possible ticket for the best possible job. Everything from careers advertisements to the Press and professional pronouncements tells the student that there is a good time coming for him when he graduates with a sound degree. And so it is very natural that, as the University Grants Committee observes, students 'will have come to the university more conscious of a need to acquire a qualification than to receive a broad education, and lack the experience to appreciate that an exclusive devotion to some scientific discipline will not give them all they need as a preparation for life.'*

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* Sir Charles Snow, *The two cultures,* 1959.

The magisterial phrases never rise to indignation; and yet they condemn not the student alone but the society and the system that produced him. Indeed, there is implicit in the UGC report on *University development* a wide, social concept of higher education that tacitly condemns much of what we are doing today in our universities. The report points to the critical social fact that: 'Many university students will come to hold senior positions of responsibility in the various walks of life which they will enter. If they are to acquit themselves well in these positions, they will need more than the specialized knowledge provided by their undergraduate courses.' How very true this is. One of the first discoveries most of us make on leaving the university is that man cannot live by Applied Chemistry or English Literature alone; the immense variety of the world is not capable of resolution in terms of our narrow specializations.

Much of this is already common ground today; and librarians will know that there is a great deal of writing and talking about the problem. The action, however, varies. At the moment most of the major efforts to remedy the situation are going on in England. The most striking development has been the foundation course taken by all the undergraduates in their first year in the University of North Staffordshire. Apart from this there has been no other comparable development at university level. In the Colleges of Advanced Technology, however, the Ministry of Education Circular 323 of 13th May 1957 on *Liberal education in technical colleges* has stimulated a very rapid development of what has been sadly misnamed 'liberal studies'; as though science is not of itself a subject for humane study. The result has been that in England and Wales, where the Ministry of Education has the oversight of education, at least 10 per cent of the teaching time in the Colleges of Advanced Technology has been given up to some form of general education. All this, you will note, is on the science side; we are still waiting for a parallel development in the arts departments.

North of the Border the only major work in this field is going on in the Royal College of Science and Technology, Glasgow. This began with the establishment of a senior lectureship in General Studies in 1958. The work, which is still experimental, takes the form of a lecture course, *The life and mind of man;* and it is, for the moment, confined to the Associateship students of the college (the Associateship is an award of honours degree standing), since the degree students in the college are governed by the separate ordinance of Glasgow University.

In devising the central lecture time was, of course, the deciding factor. As a start one hour a week was taken from laboratory work and transferred to General Studies; and to use this hour a four-year lecture course was devised to cover the students' time in the college. Thus, in their first year students hear lectures that take them from the emergence of *homo sapiens* to the end of the Roman Empire; the second year deals with the medieval period; the third year goes down to the end of the nineteenth century; and the whole of the final year is spent on the twentieth century.

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* *University development,* 1952–1957, 1958. The report does not spare the illiteracy of the arts student in scientific matters; it states that 'Ignorance of science by arts students is probably more prevalent than ignorance of the humanities by science students'. This, I believe, to be a deplorable fact of general observation.

Do not imagine that this is a 'History' course. We suffer too much from the defects of our educational system to risk adding yet another 'subject' to the already groaning list. The aim is to isolate and examine the great ideas in philosophy, political theory, theology and so on that have had a shaping influence upon human society, especially western society. The core of the course is the development of science and technology. And, wherever possible, the material is selected for the light it throws not on science or technology alone but on the complexity of human society as well; for our students will one day help to manage British industry, and it is important that they should consider the immense intricacy of human relations. Thus, the student will hear of the development of prime movers in the West in terms of engineering; and again in terms of social failure in so far as Greco-Roman society never troubled itself to develop mechanical sources of power; and again in terms of theology and economics in so far as labour problems and the rise of Benedictine monasticism accelerated the development of the water-wheel. Similarly, the student will hear of the central ideas of Plato, Aquinas, Descartes, Locke, Kant; and wherever these ideas emerge to affect society, for example in the Declaration of Independence or the outlook of the German people, these aspects will be developed.

This central lecture course is an obligatory part of the Associateship courses; it will probably be incorporated quite soon in the degree courses. The most profitable way of using the standardized procedure of 'Course requirements' was to refuse to examine—but to require a modicum of reading. There is therefore no required examination in General Studies. Instead, the students write one essay a term. This is chosen from a dozen or more topics that relate to the lectures of the term. If the essay does not reach a satisfactory level, then the student has to do it again. But this is very rare; in two years I have handed back only seven essays. The quality, of course, varies considerably. About two-thirds of them range from fair to excellent. Indeed, the top third are very often first-rate; they are in every way as lively and as cogent as anything of this type from the arts side, although there is not the same breadth of reading, as one would expect. The bottom third range from moderate to the usual sedimentary deposit; and, here again, one finds that a bad essay from a science student is quite as bad as one from an arts student.

At the same time the students are required to read six chosen texts a year. First-year students have, for instance, read Plato's *Republic;* and as a result there have been some savage arguments and excellent essays on Plato's theory of the State. Similarly, third-year students next session will read Newman on university education, Darwin's *Origin of species,* and Tolstoy's *War and peace* as part of their course requirements.

To do all this we have, at the moment, one hour a week. It is death for lecturer and student to attempt to talk for an hour on the themes of the central lecture course; and so, in order to lighten the load and to widen the students' horizons, part of the time is devoted to showing a film. These films are carefully selected for their value as films and for their general interest and relevance. Thus, a lecture on the emergence of civilization gains enormously when followed by so striking an indication of the effect of a higher civilization on a lower as can be seen in Unilever's *Surf boats of Accra.* Similarly, Unesco's admirable *Leonardo da Vinci,* the excellent *Formation of metals* from Shell, and *The Renaissance* from Encyclopedia Britannica have all played their part in presenting ideas through their images in a far more effective manner, quite beyond the reach of words and lecturers. The results here have been striking: there has been a noticeable rise in the level of appreciation, for students have now seen so many first-rate films that they are highly critical of the second-rate; and the problem of presenting material in a chosen pattern of communication has caused many to ponder the basic factors in all communication; and—best result of all—the students have thoroughly enjoyed their film shows.

In addition to the central lecture course there has been a number of voluntary extra-curricular courses. A course on public speaking has just ended; it ran weekly in the lunch hour to an audience of about a hundred. There have been courses on the modern novel and on effective communications (a tactful way of demonstrating where to put the semi-colon). The most striking of all these has been an experimental course in music that began in January this year. Staff and students have attended weekly, and figures have passed the two hundred mark; and it shows every sign of developing into a permanent feature of college life.

What happens in the future will naturally depend on what time the college is prepared to find for General Studies. The next stage will require a great deal of thought; but it is obvious that reading, writing, and talking are the next priorities. The students, if they are to derive full benefit from their course in General Studies, must learn for themselves how to take ideas and books to pieces. This means the tutorial method; and what we hope to develop soon is to offer a choice of tutorial groups that will operate in parallel with the central lecture course. These groups will range from philosophy and political theory to economics, literature, music, art; the intention is to allow the students to develop their interests in whatever way they please.

Inevitably one has to answer the usual question on the value of what is going on in General Studies. Our civilization does not recognize the value of failure—only of success. Are we successful? If this means, in educational jargon, are we closing the gap, and are we turning out the whole man of the university ideal, then the answer will only come in another ten or fifteen years. All we hope to do is to keep doors open and suggest new ways of looking at life. To think of an arts course for scientists simply perpetuates the hardening division of our educational system into two cultures, deplored so vehemently by Sir Charles Snow. We aim, therefore, at analysing the complexity of human society in all its aspects, so that when the student comes to his final year he will have a good general impression of the way in which technology and pure science, philosophy and political theory, economics and theology have worked together to shape the twentieth century. After that he will have to make his own way.

In the two years of the present course we have noticed a growing interest amongst the students, especially in philosophy and political theory. And so it should be; for these students are able and intelligent human beings, receptive to all that man has to say of man. They are certainly not the technologists of academic myth who are supposed to require a shot of culture to balance their imaginary shortcomings as civilized human beings. They are certainly very rewarding and stimulating to teach; for technology strips the mind of pretence and fad. The only depressing aspect of the whole situation is for their lecturers in General Studies to see an audience of over two hundred packing the largest lecture theatre for a weekly talk on music. On seeing that sight, you think gloomily of the specialists in Eng. Lit. and Med. Hist. How many of them would turn out for a talk on Nuclear Physics? Precious few. And in that difference lies the real danger for our civilization.

The Royal College of Science and Technology, Glasgow, is Scotland's leading institution in the field of applied science. It began as the Andersonian Institution, founded under the Will of John Anderson, Professor of Natural Philosophy in the University of Glasgow. The new institution was incorporated in 1796. It developed rapidly during the last century, when it made remarkable progress in technological education. In 1912 King George V directed that it was to be known as the Royal Technical College; and in 1913 it was affiliated to the University of Glasgow. The college is on the list of the University Grants Committee. Its curriculum covers the whole range of applied science, from Engineering to Chemical Technology, Food Science, Pharmacy, and Metallurgy.

INFORMATION REQUIREMENTS OF ELECTRONIC RESEARCH

W. A. TURNER, B SC, MIEE, MSIT
Manager, Education, Training, and Research, Automatic Telephone & Electric Co. Ltd, Liverpool

Electronics Group Conference, Ashridge, May 1959

PRECISE definition of the needs of a research organization is a very difficult exercise, and to help with the task I decided to put the question—'What would you like from your information service?'—to individuals on the research staff. The answers I received, however, merely indicated that the individual was satisfied, dissatisfied, or rarely used the service! This seemed to me to indicate a need for greater search on my part and extensive discussions brought to light the following points:

1. That the individuals often did not know about the service that could be made available.
2. That the individuals often did not know how to use the service.
3. That the individuals for a variety of reasons (usually the time factor and pressure of work) too infrequently stimulated the information service by making their special needs known.
4. That in many organizations the full value of a library and information service is not fully appreciated—there is a tendency to regard it as a static rather than a dynamic part of the organization.

On this basis I felt that the subject was well worth thought and discussion but my difficulty was how to present the material without bias.

Before proceeding, therefore, I must emphasize that, although I am aware of many of the excellent library and information services already existing, all my comments are made on the assumption that I have no such knowledge—this I felt would provoke discussion and exchange of information which is one of the functions of the Conference. Thus, if I appear biased or if I indicate a selfish interest—this is deliberate, but must not be construed as criticism of existing services nor an attempt to have a system whereby information is spoonfed to the research organization. It is always desirable that the research staff should carry out searches and evaluation.

In any activity where the individual must continuously acquire and transmit information or produce results, there are recurring complaints which tend to restrict the individual's activity. These, I am sure, are well known to you, but I should like to state the following difficulties:

1. Too much reading has to be done.
2. Too much searching has to be done.
3. Too many reports, specifications, and similar documents have to be written, edited, and published.

4. In many cases the links for the communication of information are inadequate, both in terms of the time scale and the quality of the information.
5. In too many cases the information provided is indicative rather than informative.

In a research organization some of the principal information needs might be stated as follows:

a. Information such as surveys of literature on specific topics which enable a complete paper study to be made.
b. Information which enables progress to be made on a project.
c. Information which enables scientists and engineers to keep abreast of their own and related fields at home *and abroad.*
d. Information which enables the individual to obtain, quickly, relevant information for reference or transmission to others.
e. Information in the form of answers to specific questions however vague and nebulous the questions may be.
f. Information about the companies' activities which should be available to other members of the organization.
g. Information about patents, experimental techniques, scientific meetings, societies, exhibitions, etc.
h. A service which does not permit a huge build-up of reading matter on the desk—much of which is superfluous.

There is no doubt that, although books are of great importance, journals and periodicals are the best way for disseminating research material. I believe that of all the publications received by an individual organization, only about 10 per cent are of the learned society type. The vast majority are trade journals and periodicals which are money-making projects. These latter journals obviously are valuable, but much repetition of information is given and here I feel that selection should take place. Responsible research staff must indicate their needs, and if the service is good enough they will slowly get rid of the feeling that all types of journals and periodicals must be seen in case some vital information is lost.

Perhaps internal newsletters or similar publications would fill this need if they are properly presented.

As I have said, too often the engineer/scientist is overwhelmed by the sheer volume of reading matter which appears on his desk. He tends to be selective and may unconsciously restrict the dissemination of information and, of equal importance, he may as a result not give adequate direction or stimulus to those working under him.

A system for the rapid transmission of information is an absolute necessity and you, I am sure, are only too well aware of the problems arising in this activity. There are many excellent schemes which help to speed up this process but being, on this occasion, selfish, let me say that, from the individual's point of view, much time can still be spent in finding a precise bit of information from a vast amount in one or several sources.

This naturally leads to the question of an abstracting and translating service. A research organization requires informative abstracts of whole papers or parts of papers. These abstracts should be made from papers written in English and from papers written in other languages—we cannot ignore the contributions of other countries. Furthermore, informative abstracts of parts of papers should be available at short notice—a service of this type can save considerable time and expense.

For example:

1. A reference is given—the book or paper has many pages and is written in German—the original inquirer, however, only requires information on a small part of the total to enable him to decide whether the complete section or only part of it is worth translation.
2. Popular science clippings from newspapers, etc., can be a menace unless they are informative. If the abstract merely says a new material is better than some other material and has certain characteristics, this is useless. Often the information is quite old and someone in authority asks questions so that more often than not a needless search results.

Also on the subject of abstracts and translations, a central service seems to be desirable to avoid duplication of effort. There are, of course, difficulties due to the competitive nature of industry. However, universities, colleges of technology, and professional institutions might consider serving such a scheme.

Before leaving this topic it is perhaps worth while saying a few words about the individual who can or should do this type of work.

Frequently members of a research staff do their own abstracting and translations and, provided the staffing arrangements are adequate, this can provide the service required. Usually, this is only a real success in large organizations where staffing permits this service to be given.

Abstracting is a skilled job, the summary provided by the writer of a scientific paper should be the ideal abstract, provided the scientist is able to write a good paper and provided he can break his work down to a level suitable for dissemination to those less informed than himself.

Such persons are really few in number, and hence I am led to the conclusion that for abstracting and translation work the library function should have its own personnel.

The abstractor need not be a specialist—he needs a broad but not deep knowledge of the subject he will handle. Science graduates with a language have proved successful in this type of work.

In this connection, therefore, I would urge that Graduate Apprentices should be given a period on this work as part of their training—in this way they would appreciate the need to present technical information in a proper manner, they would learn about the library service, they would learn how to use the service, and they would broaden their own scientific knowledge.

Abstracts and translations should not be restricted to fundamental theories and applications, they should also include experimental techniques, other people's components, etc., which are most essential features of the activities of a research organization.

Abstracts and translations would, I feel, form the basis of an index for storage and search of information. Properly handled, a quick résumé of any particular field of work is to hand.

Without proper selection, the circulation of bulletins of abstracts and similar journals is, to my mind, a waste of time and effort. Each organization requires to study its needs and the staff of the library and information service should decide on a pattern to be followed with the research staff. The volume of information on all topics is vast and for this reason alone it is not practical to expect a scheme to provide analysis in detail of all types of information. It is therefore most desirable that some form of selection and filtering should be carried out jointly by the research staff and the information service. This is an ideal—but I am convinced it can lead to considerable improvement in the information service. It would bring the research staff and the information staff into close contact and bring recognition of the value of the information service.

Considerable time and effort is used in the preparation and publication of reports and specifications. Few scientists take very kindly to this job which usually has to be done partly, if not wholly, in their own time even in the best of organizations. As a result, much useful information is never published or published too late.

Ideally, the scientist would like to be able to present a report of his work and leave the editing and publication to the information service. This would lead to better reports, consistency of presentation, adherence to accepted terminology, symbols and abbreviations. It would help to ensure dissemination of information to all interested parties as well as to the organization and it would strengthen the links between separate sections in organizations where research and development is carried out in various sections at widely different locations.

Another improvement which we would like to see is the even greater breakdown of information contained in bulletins, additions lists and similar documents—i.e. the information presented in such a way that the reader is satisfied that the bulletin contains nothing for him and does not leave him with the feeling that maybe under some obscure or unrelated heading is information which he requires. This I realize is an ideal and as such will never be achieved, but perhaps the advent of machines will improve this situation. Much better reference and cross-reference systems are required and this is, of course, tied up with abstracting and translation services.

Finally, I should like to suggest that the library could make an important contribution by taking the lead in organizing, either independently or in co-operation with other persons, activities such as:

a. Courses for improving the reading speed of individuals. I am told that the average adult can double his speed easily without loss of accuracy.
b. Courses for learning shortened long-hand.
c. Courses for introducing the newcomer to the library and information service.
d. Courses for educating the staff on how to use the services provided.
e. Circulation of information to colleges and universities, thereby strengthening a link which is all too slender at present.

Although I have been concerned with the needs of a research organization, I should not like you to feel that this is a selfish approach. It is not within my scope to cover this point, but I should like to say that outside the 'Electronic' activity there is a considerable amount of additional effort on production work, tools and methods, etc., which certainly can be called development work, if not research, and these sections also will require such a service as I have tried to outline. They even require some of the information needed by the electronic laboratories.

To sum up, therefore, I should say that the Library and Information Service should, within the limits of the demand,

a. Give continuous attention to the problems of providing better reference services.
b. Make every effort to ensure a good abstracting and translation service.
c. Undertake editing and publishing of reports and similar documents and establish a report register for dissemination to the whole organization.
d. Undertake or assist with the educational role of providing:
  i. Special courses to assist executives.
  ii. Special courses to introduce newcomers.
  iii. Special courses to educate users.
  iv. For the distribution of information to educational establishments.
e. Study its own special problems relating to the collection and dissemination of information so that it can contribute to the ultimate machine methods which must come sooner or later for searching, etc.
f. Take particular care to publicize itself and to ensure that its resources are fully used. Members of staff should spend as much time as possible with the research staff.
g. Organize itself so that, if possible, good training can be given to the graduate and other apprentices by work on abstracting, translation, and searching.

I have tried to indicate some of the main services that a research organization would like to have and, as I said initially, it is an idealistic approach to the problem. With the ever-growing volume of information and increase in size of journals, it does, however, serve to show the gigantic tasks which must be undertaken to provide such a service. This I feel, from your point of view, must be valuable, since the size of the task shows that worthwhile improvements are unlikely to be obtained without adequate staff, equipment, and encouragement from management.

In any topic such as this there is always a very large gap to be bridged between the academic approach and practical application, but, however idealistic the goal, I am sure that this is the way to make progress.

THE FUTURE OF INFORMATION WORK

J. FARRADANE

Aslib Winter Meeting, London, 12th November 1959

IT has rightly been said that scientific research is of no use whatsoever—unless the results are published or otherwise communicated to others. This may be a cliché, but it is one worth repeating, because it is one of the bases of science, and the foundation of information work. Since the beginnings of modern science, after the Renaissance, when the secretiveness of the Middle Ages and the alchemists was swept away, the need for free discussion and intercommunication has been ever more clearly recognized. When, with the advent of the industrial revolution, science, previously an intellectual hobby, became a necessity, the pace of research and invention, and with it the volume of publication, increased and has continued to increase steadily. At the beginning of the nineteenth century we find journals beginning to include short accounts, mostly critical reviews, of papers published elsewhere, but it was not long before the first journals appeared containing only such reviews or abstracts, from which the critical element largely disappeared, and an objective standard was set. This was the first step in information work, and it is important to note that it originated within the scientific field itself, that is, it was performed by scientists on behalf of their fellow researchers.

I speak of science in particular, not only because much the larger part of information work today is carried out in the scientific and technical field, but also because information work is itself a branch of research, and its characteristics are essentially those of the scientific outlook. The task of each research worker to keep himself fully acquainted with up-to-date knowledge in his special subject has always been an essential part of the work as a whole. In the nineteenth century it was still reasonably possible for one to expect each worker to find time for the adequate performance of such a task, even though one could easily cite classic examples of neglected publications. Industry was then more conservative, especially in England, where advances made in the academic laboratories were often neglected and it was left to other countries to develop the ideas; but everywhere the pace was slower than now, and the lag in the application of new ideas was often very great.

With the turn of the century, and, as we all know, with the immense stimuli of two world wars, the picture has radically changed. No country, no industry, can rest on its laurels; monopolies of know-how and invention have largely vanished, and the need for research in all fields has been generally recognized as a factor which has come to stay, a vital activity for all industries and all countries. In consequence the amount of research being undertaken in all countries has been increasing, and is continuing to increase without foreseeable limit. The traditions of free international publication of knowledge have remained, with relatively few interruptions or interferences, and we are faced with a mounting rate of publications of all kinds. It is clearly no longer possible for the individual researcher to keep himself adequately informed by his own personal efforts. It is in fact not at all impossible that, without adequate solutions of the problems of the literature, research may defeat its own ends, and its pace may be slowed down by wasteful repetition of work, in the absence of information of what has already been done. Two large international conferences in recent years have failed to produce definitive solutions. Even the mainstays of the large abstracting journals, hitherto our trusted guides in the wilderness, are rapidly becoming impossibly bulky for normal perusal, and burdensomely expensive to produce.

In this dilemma, the specialization in the finding and dissemination of literature, which we know as information work, was an inevitable development. For many years abstracting, without other methods in particular, had been a sufficient aid. After the first world war, however, when the output of literature was found to have at least doubled, this was not enough, and variously styled people began to be employed on the task of providing information. The formation of *Aslib* at that time was an indication of the need. I do not wish to digress here to professional disagreements, but one or two facts must be mentioned. We have seen how abstracting, a very frequent task in information departments today, originated in the scientific field, and was sponsored by scientific societies. Libraries were, and still are and will be, the repositories for published information, and research into that information must be carried out in those libraries to a large extent. The task of reading is, however, one which the researcher himself has to undertake, even if nowadays he is necessarily reduced to reading only that part strictly relevant to his work, little time being available for wider study; it is obvious that in deputizing for the researcher the information officer must have largely the same sphere of knowledge and outlook, and so must be an information *scientist*. Few of the essential tasks of an information scientist have affinities with librarianship, and newer developments of information work are still less related.

Let us now survey the sort of work which is generally being carried out under the title of information work. I shall not include such tasks of librarianship as borrowing and lending of books and papers, periodical circulation, and photocopying. As I shall discuss later, industry in general has much to learn about the possibilities of information work, and employers, who have often been slow enough to appreciate the value of maintaining a library, now only too often confuse its functions with those of an information department, since they have not yet appreciated the nature of information work, apart from misplaced ideas of economy by trying to make one man do two jobs.

Similarly, I do not include the making of extensive translations. Obviously, in dealing with foreign literature, it is an advantage for the information scientist to have ability in reading languages, but regular translation is a task for the appropriate specialist, the translator. Thus the information scientist may usefully run through a paper occasionally, making a reading translation for the urgent needs of a client, but more frequent translation would misuse his special capacities. Where necessary, translators may of course be employed as a special section within the information department.

My present summary of activities is drawn partly from personal experience of visiting departments, and partly from special surveys which have been made by Aslib and other bodies, and from various papers discussing information work, such as the recent very useful survey by Mr Sewell, in *Aslib proceedings* (1959, vol. 11, pp. 240–65). Frequently the work of the information department has been inaugurated as some form of internal abstracting service, even if this mainly consists only of a list of titles taken from the limited range of periodicals taken by the library. In other cases, ambitious projects of the production of abstracting journals are undertaken. There is usually an attempt, at least, to maintain some form of detailed index of information from the literature, including internal reports, but in only a few cases are there really large collections (above tens of thousands); this is the position even in America. Several departments issue bulletins and reports of various types, providing special bibliographies, current or long-period surveys, and, less often, well-documented reliable critical surveys. In most of the better departments an effort is made, sometimes casual, sometimes well-organized, to keep research and interested administrative staff, etc., informed of current literature of interest to them; the department scans journals, etc., regularly and disseminates a notification of useful material either by verbal communication or by written lists or index cards. Finally, there is the answering of inquiries, which may be done by actual searches of sources of information by the department, or by simply referring the question to other individuals, such as specialists in a firm's own staff or outside, or other information scientists. Where, however, inquiries are answered solely by passing them on to others, I would not rate the information department very highly. (In this respect, I am of course not denigrating the activities of the Aslib information department, which has a special clearing-house function.)

Beyond such more usual activities there are in a few places developments of information work which are on the borderline of other spheres of work. In some departments of firms who have no separate patent department, patent searches and allied tasks are undertaken. In other places the work extends to the organization of conferences, technical committees, and exhibitions. This work is part of, or very similar to, the liaison activities undertaken, in particular, by some research associations, where field work is undertaken, in the sense that members of the information department will visit firms and the actual workers, to take information of technical improvements or new methods direct to those who will use them, thus overcoming traditional conservatisms. They may also visit firms and other organizations, both here and abroad, to gather information. Again, allied to this, tasks bordering on public relations work, technical writing, and publicity may be included to some extent. Whilst I would not claim that these last jobs are normal parts of information work, though they are often undertaken in research associations with company memberships, they indicate, as Miss Slade pointed out in a recent article in *Engineering* (1959, 23rd October, p. 374), the need for an information officer to be able to be adaptable at need. Finally, at a very few places, research on problems in information work is beginning to be undertaken, such as the search for new paths in classification, improvements in punched card systems, new methods of coding organic compounds for information storage and retrieval; in America, in particular, there has been great enthusiasm for the application of electronic machines to the great problem of storage and retrieval.

This brief survey *may* give the impression that information departments are all great hives of activity, undertaking a great variety of tasks simultaneously, and providing an unfailing mine of information in support of research and industry; you have, however, probably noted the reservations I have introduced, and the references to the few places undertaking certain tasks, and you will have agreed that the picture is not so bright. Many of you here tonight are probably engaged in information work, and you may often have thought that your own particular range of work is very limited in scope, or at least inadequately encouraged. Most of us still have to practise the art of salesmanship for our wares, either to research staff or to directors. I will not mince matters: let us face the truth. As Miss Slade said at the Aslib Conference this year—and I am entirely in agreement with her—the general standard of information work is appallingly low! There are too many libraries where someone inadequately experienced in the special subject is expected to do a little abstracting or produce a little considered information, as distinct from the provision of books or papers which may, or may not, provide an answer. There are too many one-man jazz-bands, where a possibly bright individual struggles against hopeless odds to provide an adequate service, whilst trying at the same time to convince older-school research workers that he can do something to assist them, perhaps even in their own specialized field. There are too many quite large departments, rejoicing in the name of information departments, which are carrying out very little real information work, and imagine that maintaining a large library, with much circulation of journals, photocopying, etc., with possibly quite good assistance to readers and publication of selected bibliographies, and so on, constitutes the whole field; such departments are still often unable to provide authoritative information—in their own field—in direct verbal reply to a simple question. Does this last suggestion seem to you to go too far? I am certain that it does not, and that it is in fact an essential feature of a good information department.

On the other hand, there is no doubt of the pressing need for good information services, and for better methods of recording, analysing, finding or retrieving, and disseminating information, especially in the scientific and technical world. As I said at the outset, there is the growing colossus of the literature, the needs of competitive industry, the wastage of labour arising from lack of knowledge and duplication of effort, and the sheer economic inefficiency of out-of-date methods. There is also a wider view to be considered. In a world with an alarming rate of increase of population, with continuous tensions between the haves and the have-nots, or between the more developed and the under-developed countries, in an increasingly scientific and technological age, inefficiency is less and less tolerable. Such problems call for much better information services on an international scale. New knowledge is forthcoming throughout the world, and is not the prerogative of one country or area; for the same reason, it is clear that new knowledge must be garnered from all parts of the world. In a closely knit world the larger countries have the responsibility of aiding the advance of the smaller ones, and of developing the under-developed;

in the problem of enlarging the food supplies of the world, apart from more complex needs of health and education, the necessity of adequate dissemination of information is obvious.

Where, then, does the failure lie?—for I count it as failure in such necessary tasks when the standards of work are so low. It cannot often be the fault of the individual worker in an information department; there is no reason to suggest that greater incompetence arises in this profession than in any other. There is no doubt, however, that the target set before the individual, the standards required of him, are too low. Although the necessity of team research in most fields is now generally agreed, there are still many individual researchers and directors who are obstinately blind to the inadequacy of their personal reading and other sources of information, and reject or only reluctantly seek aid. Managements and governments have often failed to appreciate the importance of information in the modern pattern of progress; sometimes perhaps they fear that their own secrets will be lost in the process of gathering information, and so reduce the information departments they have to impotence, by not providing them even with internal information or not granting them responsibility and trust. Most of all, however, I think it is a matter of ignorance—ignorance of the possibilities of information services, and ignorance of the value of information to a particular organization. There is also insularity, a repudiation of value in foreign work, if not even prejudice against it. There may be traditionalism—what my father did is good enough for me, so why should we bother to change—coupled with a real fear of progress and change being forced on one. On the other hand, it may be just a matter of laziness in facing up to the needs of the age.

In the matter of standards of work, however, the information scientists should be alert to aiding themselves. We need high, definitive standards of the work to be performed, a goal which all can keep in sight. Even though organized information work is perhaps not more than forty years old, there has been the opportunity before now to promulgate higher standards and to keep employers informed of the steadily increasing potentialities of information work as the necessary basis for progress in research and development. I think that Aslib could do much more in this direction. I can also assure you that such tasks are among the aims of the recently formed Institute of Information Scientists.

These have been harsh words, but there is another, and a brighter side of the picture. There are indeed a number of information departments in this country, and elsewhere, which are doing excellent work in a wide range of the activities that I have mentioned. The value of information work is well recognized, though in varying degree, by the larger firms; there has been a rapid rise in the number of information departments since the war and, if the standards are often low, at least there has been some sort of acceptance of the idea that information work is useful; many national organizations, such as the DSIR (especially in the research associations), the Commonwealth Agricultural Bureau, etc., and government departments have supported the development of good information departments. Large national centres have been established in Russia, Poland, and Japan, and if such organizations are not always found acceptable politically, at least they are demonstrating their value. The Americans have rejected the idea of a national information centre, but the National Science Foundation has recently taken a great step forward in promoting information services and in supporting research in documentation.

In principle, therefore, the need for information services is generally recognized, and has also received attention at large international conferences, and by such international bodies as Unesco and EPA. But, as Dr Alexander King said in a recent address, the approaches so far made to international documentation and international information work make a pretty sorry story. It has been clear enough at the different conferences that the attempts made to solve the many problems involved in improving methods of documentation, information storage and retrieval, and international co-operation have been highly individualistic and unco-ordinated, with little attempt to build up a progressive body of knowledge and a progressive line of research. In the field of classification alone it is horrifying to find how little the workers in different places and in different countries know of each other's methods and ideas. The cobbler's children have indeed been the worst shod! Nevertheless, the international endeavour exists, and will grow.

So, we come to the future. Before we consider any practical steps that might be taken, and developments that may arise, let me return for a moment to consideration of the essential nature of information work. Information work was originally and still is primarily a specialization of a necessary part of research work, and it thus has the characteristics of research. Whereas the practical research scientist seeks new facts from the storehouse of nature, the information scientist seeks new facts—new to the inquirer—from the storehouse of existing knowledge; he then has the ancillary task of preparing and presenting those facts in various suitable forms. It is also essentially of the nature of research work. The task of the practical researcher is to bring isolated facts into relation with each other and present them in a rational structure of a theory or a process. The information scientist must equally present facts in a useful, orderly, co-ordinated form for use by his colleagues. You will note that I am speaking of information as facts; it is, I repeat, the hall-mark of good information work that it is factual information which is handled, not just references to documents. There has been too much obsession with documents—necessary though they eventually are in support of information. The information scientist is therefore necessarily a scientist, capable of *evaluating* the information gathered and of exercising an advisory function.

The information scientist's job is first to be an expert in knowing and using sources of information, and secondly to be able to transmit the information to others. To function efficiently, he must receive the same consideration and encouragement from management as is given to other branches of research. The senior information scientist should have the same status as the head of any other research section, and in addition he must have the trust and confidence of all other sections and be kept fully informed by them. If he is not kept fully informed by management of their interests and objectives, he cannot in return keep them fully informed. It is thus essential that management should have a full understanding of the work of the information department and a continuing interest in it. In short, management must be continually information-conscious. It is surely economic folly, if nothing worse, to start any project, or research, without an adequate knowledge of past work, relevant facts, and favourable or unfavourable factors in the situation. It is wilful ignorance for any manager, director, member of a research or development committee, or even an individual scientist to imagine that he, his firm, or even his country, has a monopoly of knowledge; the rest of the world knows better!

There are some who bewail the increase of specializations, but that of information work has become a necessity. As industries and nations become conscious of this necessity, so must information work develop techniques, abilities, and higher standards to meet the developing needs. We shall from now on have to realize that information work is in itself a branch of science, calling for research to solve its problems. There are the ever-increasing difficulties of providing comprehensive coverage of the literature by abstracts; can such enormous and expensive compilations as *Chemical abstracts* or the *Referativny Zhurnal* (which has no subject indexes) continue to give useful service, or will other solutions have to be sought, such as the encouragement of good specialized journals for each small field, each usefully duplicating fringe material from its own point of view? If governments and perhaps the larger industries and scientific societies support the production of such journals by the better large information departments, a solution to the problem might be found; international collaboration would of course lighten the burden. There are the problems of dissemination of information, especially internationally; these are as much sociological and political problems as problems of the mechanics of dissemination, but, if the endless fruitless discussions are to be by-passed, it is surely the information scientists themselves who must collaborate in a concerted effort to overcome the difficulties. Above all, there are the challenging problems of information storage and retrieval. Despite the enthusiastic American advocacy of the computer, it has become clear that whilst many problems of numerical data processing have been solved, the problems of non-numerical data processing, or the storage and retrieval of subject information, as needed from numerous different points of view in varied combinations, are still far from solution. In view of the size and complexity of knowledge in even a small field, I have no doubt that information departments of the future will have to adopt various types of mechanized systems, though I equally have no doubt that these systems will have to be very different from the electronic ironmongery so hopefully promised today. There will have to be economically suitable small equipments adapted to special tasks in small fields, and the information scientists will have to play their part in developing them, aided by the industrial organizations in which they are working.

As a small digression, I would note the position of the universities; before the war I carried out occasional information work for one or two professors, and now there are beginning to be whole-time staff in a few university departments. Even the so-called 'pure' scientist has thus found that he can no longer devote sufficient time to gathering information, and I think we shall eventually find that all universities will require information departments attached to their research activities.

The larger part of the information to be gathered and disseminated is not in any way secret; it is the heritage of scientific knowledge, available to all who seek it. Industrialists are gradually learning to realize that secrecy has ceased to pay, and that they have more to gain in the give and take of information than they might lose in the possible stimulation of ideas in competing organizations. As this trend continues, it will become easier for their information personnel to collaborate with each other, rationalizing effort and reducing costs; it is, of course, being done today to some extent—often of necessity *sub rosa,* because of suspicious managements—but I suggest that it should be encouraged and extended. With governmental advice, and collaboration between information departments, the information system might be the best channel for emphasizing facts which bear on the requirements of gearing production to the national economy.

On the international scale, as I have already mentioned, the need for collaboration in the dissemination of information is urgent, and it is at this level that I should expect information work to achieve its greatest expansion in the near future. At this level, perhaps, the great problem of the babel of languages may ultimately be tackled.

Higher standards of information work will of course involve the provision of better trained staff. There is ample evidence that all over the world it is being realized that training for information work is now necessary, and various bodies are studying the requirements. It is important that high standards should be set, and that courses should be carefully planned. There is still much confusion with librarianship courses. The possibilities are under active review in this country. It is very desirable that enlightened management should appreciate what these standards should be, and should co-operate in establishing them, as has been done in other professions. Such developments are obviously of the greatest importance for the future of information work.

When well-developed, competent information departments exist, with trained, high-calibre staff, their usefulness in an advisory capacity will expand. This has occurred to some extent in the economic field, and to a smaller degree in scientific activities. Advice must be based on knowledge, and it is therefore good sense to look for advice where knowledge exists. The determination of policy remains, of course, with management. An increase of the advisory function will be a natural development of the interest of management in information services.

When both technical and economic information departments are established in close liaison, the combination could in future become the accepted central organization through which would be linked the various departments of a firm which require information, such as management, sales statistics, patents, publicity, public relations, development and research.

In conclusion, therefore, the hope for the future lies, on the one hand, in raising the standards of information work and improving techniques, and thus attracting higher-grade personnel, and, on the other hand, in stimulating government and industry to greater awareness of the potentialities of information services. In England, in particular, where our greatest exportable assets today are the products of our intellectual resources and invention, information is clearly the essential prerequisite for progress.

DISCUSSION

During the discussion several members raised points about the staffing of information services: 'throw-outs' from other departments were not wanted—failure in other forms of technical work was no qualification for information work. On the other hand, the mere fact of having changed jobs was not a disqualification: probably none of those present had started working life as information scientists. What was vital was that a man should have the intellectual capacity to grow with the job.

In answer to questions Mr Farradane said that so far machines had been used mostly for sorting rather than for computing, and that existing machines not designed for information work were being used more because they were available than because they were necessarily suitable for information tasks. H. P. Luhn in his automatic abstracting experiments was using the computing capacity of machines by employing them to count the frequency of significant words and combinations of words, and so to select key sentences from the original to form an abstract; but he was working on an intractable raw material—language. In Mr Farradane's view machine translation services were unlikely to be achieved within the next decade.

Small manufacturing firms, it was suggested, showed themselves unable to make much use of published information and hence of conventional information services. Personal communication and advice seemed to be the only effective form of communication to them, but this was costly. Mr Farradane thought that in the long run the managements of such firms could be persuaded that they could not afford to neglect information.

An appeal was made to Aslib not to neglect classification: classification was fundamental, not a dirty word.

RAPID READING*

MARGARET LAMB, DN
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Scottish Branch Conference, Edinburgh, 5th February 1960

AFTER speech, reading is the most important of the basic skills, involving as it does recognition of a visual pattern, and the ability to pronounce it. Reading readiness has been the subject of much investigation and varies considerably from country to country, but in Great Britain it is now fairly generally accepted that the age at which a child is ready to read depends upon intelligence, home influence and teaching methods. The latter have varied very much in the last decade and much investigation is still going on to determine the best methods. To combine maximum comprehension with rapid or effective reading, more early practice in 'silent' as opposed to oral reading is probably necessary.

The amount of reading required of most business and professional men, doctors, lawyers, scientists, and librarians among others, is vastly increasing and it has been shown that 90 per cent of such readers could double their reading speed, and also considerably increase their comprehension. The easiest, surest and fastest way of doing this is by a rapid reading course which will not teach reading to those who cannot already do so, but it will give greater reading speed without loss of comprehension, provided the techniques are acquired and practised. Slow reading does not help comprehension, and flexibility is the hall mark of the able reader. The three main drawbacks to flexibility are regression—repeated re-reading of the same passage, short eye span—taking in a smaller number of characters than are possible with practice, and vocalization of the words. Methods for analysing reading faults have been scientifically developed, and the actual movement of the eye can be photographed, showing the number of fixations per line of type, back-tracking, and length of time taken to read a specific number of words. The objectives of a rapid reading course are therefore, to increase speed without loss of comprehension, to increase self-confidence, eye span, vocabulary and flexibility, and to overcome vocalization.

The course commonly used is the Harvard Reading Course, which is designed to develop in the student a greater range of reading speeds and the ability to adjust speeds to the type of material being read. It consists of practice in reading from films, which prevent regression, graded reading passages, training exercises, and vocabulary tests. Without undertaking a course specifically designed to improve reading skill, it is possible to achieve improvement by private study and practice. This can be done by reading material of standard difficulty, such as popular magazines or light novels, and concentrating on reading greater lengths of text in the same time on successive occasions. To test comprehension, reading can be done from books specifically designed to test reading skill, which include tests on comprehension relating to their text.

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* Summary of talk.

Improvements in typographical design, and investigations on the optimum length of line for rapid reading are also helping to improve reading skill.

Thorough reading does not imply word-by-word reading, but reading for ideas. Reading whole thoughts and phrases increases both speed and comprehension. Flexibility is the art of reading more quickly or slowly according to the importance to the reader of the ideas introduced, and is as important as overall increased reading speed.

ASLIB EXHIBITION OF METHODS FOR PRESERVATION AND STORAGE OF PERIODICALS

G.M.PATERSON, BA, ALA

Librarian, Aslib

THIS exhibition was held in the library from 1st to 15th March and attracted some 250 visitors. This figure indicates that the theme of the exhibition was one of widespread interest and related to problems that most special libraries have to face. The figure also indicates an average of twenty-three visitors on each day that the exhibition was open; with the average length of a visit in the region of thirty minutes, considerable calls were made upon the time of the library staff.

The aim of the exhibition was to bring together many of the available methods and materials for protecting, preserving and storing unbound issues of journals (a list of exhibits is printed at the end of this article). A certain number of journals in any library will be of central interest and continuing value to the users of the library and will therefore merit permanent binding by traditional methods; others, possibly the majority of those received, will be of reference value for varying periods, between one year and five years, after which time they might be safely disposed of. An important initial step, therefore, in considering periodical storage, is the determination of the useful life of each individual periodical received. Certain studies have been made, on the basis of frequency of citation or actual usage, of the useful life of journals in certain scientific and technical fields, and these will be a useful guide; a librarian's own experience, however, of the particular needs of users of his library will frequently be the surer guide.

Even where it is intended that volumes of certain journals shall be permanently bound, it is sometimes desirable that the issues remain unbound for a period of possibly two or three years. For any journal that is in frequent demand, permanent binding has the serious disadvantage of tying up a whole year's or a half-year's issues and denying their use to more than one reader at a time. This can be overcome to a certain extent (and at considerable cost) by photocopying articles on demand, but there remains the problem of availability when a volume is lent outside the library and the increased postage burden for a bound volume compared with a single issue. Thus some form of temporary binding or storage merits consideration even for journals that will eventually be permanently bound.

Once the initial decision has been taken on how long each individual journal title will be preserved, various other practical considerations have to be examined. Space is obviously a vital factor; besides assisting a decision on what may be kept and for how long, the available space may also determine the choice between the various methods of temporary storage. In libraries where space is particularly restricted, the practice of preserving only individual articles extracted from journals is occasionally resorted to, and this practice lends itself well to certain forms of temporary binding. Microrecording is an obvious possibility for journal storage, whether space is restricted or not, but until there are striking advances in the development of reading devices, journals in microform are unlikely to prove popular with the library users. Cost is the other highly important factor: the difference in cost between putting a piece of string around a year's issues and housing issues in a neatly lettered temporary binder is considerable, as is the difference between a simple open-ended box made of container board and a wooden-ended transfer case with finger tab and identification slot. The cost of equipment must of course be balanced against cost of staff time spent in retrieving individual issues when required and refiling them. Finally, as several visitors indicated, dust can be an obtrusive factor in deciding on a method of storage and to some minds leaves little or no alternative to the closed transfer case.

The Self-Bind[1] equipment exhibited was new to many visitors. Any form of 'perfect' binding is anathema to some librarians, probably as a result of purchasing books bound in this method which fell to pieces after a brief period of handling. It is regrettable that inadequate adhesives applied to unsuitable varieties of paper and optimistically labelled 'perfect' binding has produced deplorable results and prejudiced many minds against a method which, properly applied, has positive advantages for certain types of material. A good plastic adhesive, such as is supplied with the Self-Bind kit, applied to accurately guillotined sheets to a maximum thickness of perhaps three-quarters of an inch will provide a volume which will stand up very well to reasonable handling. The word 'reasonable' requires some emphasis; it seems doubtful whether this method is advisable for binding journals which are likely to be consulted fairly frequently. Unless extreme care is taken in positioning the sheets in the clamp, a single sheet or several sheets may fail to make proper contact with the adhesive and will soon part company with the other sheets; these fugitive sheets can of course be tipped in, but the need for this operation, if it recurs frequently, will consume time and cause irritation. The method is particularly suitable for applying to volumes of bulletins, occasional papers, reports, and the wide variety of duplicated and stapled documents which accumulate in most special libraries. It is also particularly suited to making a convenient volume from a series of articles extracted from successive issues of a journal, or from the remnants of journals when the advertising matter has been extracted. Protective boards enclosing the sheets must be reasonably flexible to avoid placing too great a strain on the spine made by the adhesive and muslin tape. It is possible to letter directly on to the muslin tape, but the appearance of the volume can be much improved by affixing a strip of bookcloth to the spine, or, in some cases, by affixing the title of the journal clipped from one of the actual issues being bound. An efficient guillotine is absolutely essential to achieving successful results and, although the Self-Bind kit is reasonably priced at 26 guineas, the necessary expenditure of at least £50 on a guillotine may make a number of librarians pause. Two other comparable 'perfect' binding units, not included in the exhibition, are commercially available at rather higher cost.

Various types of temporary binder were displayed employing wires, cords, and clips to permit loose-leaf filing of journals. The book-form binder[2] gives some approximation to the appearance of a permanently bound volume whilst permitting the extraction of individual issues when required. The strength of the clips holding the issues is such, however, that the volume is difficult to consult and the extraction and return of individual issues cannot be done quickly. Wire-type binders[3, 4, 6] are easier to consult, and issues can be extracted easily (though not returned quite so easily when the binder is full). A similar type of binder[5] employing cords instead of wires seemed to have no particular advantage, the cords being in fact rather less flexible than the wires. Temporary binders normally cost less than permanent binding but more than transfer cases; in the mass, their appearance can be very pleasing and individual librarians will have to estimate for themselves the value of appearance.

The prices of the various types of transfer cases that were exhibited ranged from *1s* to *9s 7d* each, and here again appearance as much as stoutness of construction and skilful design needs to be evaluated. Most librarians employ some form of box for some forms of material, so that such advantages and disadvantages as they possess are well known. One may perhaps stress that a box full of journals on an upper shelf can be a heavy, awkward, and dangerous object. For journals which are in frequent use, the open-ended box[16, 17] has definite advantages in being cheap and allowing the speedy retrieval and refiling of any particular issue. A number of such boxes in two or three widths and two or three heights would accommodate a large percentage of the journals in any library. A word may be said for collapsible transfer cases[7, 12], since a great deal of space may be saved when a large number of empty cases are bought and have to be stored pending use. Such cases are not strong but would give adequate protection for little-used journals in storage.

The protection of individual issues should be considered whenever a journal is likely to receive considerable handling, either in the course of extended circulation within the organization or during postal loan. Protection may be obtained either by inserting the journal in a manilla[22, 23] or transparent plastic folder[24, 25, 26], or by applying a protective plastic film directly on to the journal. The latter process may be effected either by lamination with a plastic skin sealed to the journal by the pressure of a heat press[21] or by using one of the varieties of self-adhesive plastic film[30, 35]. The heat press is a heavy and fairly expensive item and could perhaps be justified only in libraries where very extensive use is anticipated, not only for individual periodicals but for other purposes such as book-jacket protection. With journals, the method is really successful only when it is possible to separate the contents from the cover and laminate straight across the inside and outside of the cover; if this is not done, a weakness remains at the vulnerable part of the journal—the spine. The self-adhesive plastic films are more easily applied and the results, particularly in the case of Filmolux[35], seem indistinguishable from those of heat-sealed lamination. It is not yet possible to say how journals treated with these films will stand up to regular handling, but a watch will be kept on certain journals thus treated in the Aslib library and a report made in due course.

The plain manilla folder may be found adequate protection for journals on circulation, permitting a circulation slip and any other information or instructions to be attached to its front cover. Transparent plastic covers are perhaps more attractive, revealing the identity of the journal at a glance, and can be used in addition for protecting current journals on display. Either type of folder could be used for protection of a journal sent on interlibrary loan. The cost of these folders merits critical comparison; the transparent cover[28] made from used x-ray plates, reinforced at the edges and made in sizes to accommodate individual journals, appeared a sound economical proposition, though, again, time will reveal how well it stands up to regular handling.

The type of protective binding for individual journals[26, 27], as used by the DSIR Lending Library Unit, could not perhaps be justified by the majority of special libraries. The enormous volume of postal lending of journals envisaged for the National Lending Library for Science and Technology is unlikely to be approached by any libraries other than, possibly, those of some research associations. Nevertheless, the method might be considered in other libraries for a limited number of key journals which receive heavy use and for which the restriction on availability imposed by permanent binding into an annual volume is undesirable.

The method of journal storage and protection employing Jetleys' filing system[33], though unpromising at first sight, revealed definite advantages on closer examination. A strip of butterfly tabbing is attached to the whole length of the spine of the journal and the necessary holes are punched through the tabbing to enable the issue to be filed in the ring binder file, the file being housed in a dustproof cover. At the end of a year (or on the completion of a volume) the journals, housed between a pair of book covers, are removed from the file, secured firmly by a binder cord taken through the punched holes, and the whole is made into book form by bringing a binding cloth already attached to the end book cover round the spine and pasting it to the front book cover. The advantages of this method are that journals are available in loose-leaf form while they are current and can be bound into a presentable volume *at no extra cost.* Since the holes are punched through the tabbing, the journals are not mutilated and the inner margins are not affected. A binder file will be required for each journal title, but once these have been purchased the only recurring expense will be for replacing the pairs of book covers each year at approximately *3s 4d* each. Where a journal cover seems likely to part company from the contents of the journal, the cover may be removed and the tabbing attached directly to the first and last pages of the body of the journal.

Only a very few examples of local ingenuity were communicated for inclusion in the exhibition. These were chiefly simple methods for holding the individual issues of a volume together more or less securely and had the undisputed virtues of cheapness and, presumably, effectiveness. From the interest shown in one or two 'sidelines' such as the self-adhesive label holder[34] for guiding shelves and a little de-stapling device which was not intended as an exhibit, it would appear that an exhibition of 'gadgetry' would have a wide appeal. The impression was obtained that the exhibition was a successful one and that nearly every visitor found one or two items at least that were of potential usefulness. Members who wish to have further information, samples, or a demonstration of any of the items are recommended to communicate direct with the suppliers listed below to whom Aslib's thanks are due for co-operation in arranging the exhibition.

LIST OF EXHIBITS, PRICES, AND SUPPLIERS

STORAGE

Temporary Binding

1. Self-Bind Complete kit: £27 6*s*. Ideal Forte 36 Guillotine: £52 10*s*.	Westwood Paper Ltd, 185 Goswell Road, London, E.C.1. (CLE 6054.)
2. Quickbinde book-form binders 14*s* 6*d*–16*s* 6*d* each.	Quickbinde Ltd, 28 Cale Street, London, S.W.3. (KNI 4291.)
3. Quickbinde wire-type binders 14*s* 6*d*–16*s* 6*d* each.	Quickbinde Ltd
4. Easibinders 13*s* 6*d* each.	Easibind Ltd, 84 Newman Street, London, W.1. (MUS 2141.)
5. Cordex binder 18*s*–30*s* each, depending on size and quality.	London Letter File Co. Ltd, 143 Farringdon Road, London, E.C.1. (TER 1441.)
6. 'Tenet' periodical binder 18*s*–30*s* each, depending on size and quality.	London Letter File Co. Ltd

Transfer Cases

7. 'Winel' Comet collapsible transfer case. 2*s* 11*d* each.	Henry Elwin Ltd, Plumptre Street, Nottingham. (Nottingham 54033.)
8. 'Libraco' cardboard box 43*s* 6*d* per dozen.	Libraco Ltd, Lombard Wall, Woolwich Road, Charlton, S.E.7. (GRE 3308.)
9. Wood end transfer box 103*s*–106*s* per dozen.	Frank Wilson & Co. Ltd, 55 Fore Street, London, E.C.2. (MON 8907.)
10. Vertical filing transfer case 66*s*–70*s* per dozen.	Frank Wilson & Co. Ltd
11. Fibro transfer box 75*s*–78*s* per dozen.	Frank Wilson & Co. Ltd
12. 'Storflat' transfer case	Trade Loose Leaf Co. Ltd, Guidex Works, 99–102 Bradford Street, Birmingham 12.
13. 'Winel' Tip Top transfer case 9*s* 7*d* each.	Henry Elwin Ltd
14. Wire-stitched rigid box, leatherboard 1*s* 6*d* each for quantities of 50.	R. G. Branch & Co. Ltd, 131 New North Road, London, N.1. (CLE 3655.)
15. Wire-stitched rigid box, container board 1*s* each for quantities of 50.	R. G. Branch & Co. Ltd
16. Open-ended box, leatherboard 1*s* 4*d* each; 177*s* per gross.	R. G. Branch & Co. Ltd
17. Open-ended box, container board 11*d* each; 120*s* per gross.	R. G. Branch & Co. Ltd
18. 'Bridge' pamphlet case 82*s* 6*d* per dozen.	Libraco Ltd
19. Wire-stitched transfer case 2*s* 11*d* each.	London Letter File Co. Ltd
20. Periodical storage box 4*s* 4*d* each; 630*s* per gross.	J. Barley & Son Ltd, 5 Mallow Street, London, E.C.1. (CLE 2887.)

PROTECTION OF INDIVIDUAL ISSUES

21. Lamination with 'Morane' plastic skin. Price of plastic skin varies with grade and quantity, e.g. roll 10 yds × 13½ in, Standard Grade 0.001 in: 18*s*. Model J heat press (as exhibited) £57 10*s*.	Morane Plastic Co. Ltd, 21 Woodthorpe Road, Ashford, Middlesex.
22. Simplified folder 32*s* 8*d*–35*s* per dozen.	Quickbinde Ltd
23. Single booklet cover 18*s* 8*d* per dozen.	Quickbinde Ltd
24. Plastic pocket transparent cover 6*s* 6*d* each.	Quickbinde Ltd
25. Spiral transparent splash-proof cover 7*s* 9*d* each.	Quickbinde Ltd
26. Protective binding for individual periodicals (as used by DSIR, LLU) 2*s*–3*s* 3*d* per issue, depending on style of original.	A. Wills Bookbinders Ltd, 127A Charlmont Road, London, S.W.17. (BAL 6456.)
27. Protective binding for individual periodicals (as used by DSIR, LLU) Approximately 1*s* 10*d* per issue.	F. W. Field Ltd, 68 Weaver Street, Buxton Street, London, E.1. (BIS 5644.)
28. Plastic covers for periodicals From 82*s* 6*d*–87*s* 6*d* per 100.	E. H. Blackwell, Plastics, 33 Wyatt Road, Highbury, London, N.5. (CAN 2642.)
29. 'Clearface' transparent paper bags 60*s* 9*d* per 1,000.	Kent Paper Co., Canterbury Road, South Willesborough, Ashford, Kent.
30. Transpasene Reels of 20-in width, 25 yds: 4*s* per yd; 1,000 yds: 3*s* per yd.	BX Plastics Ltd, Cellulosics Sales Division, Manningtree, Essex (bulk suppliers). Miltoid Sales Division, 34 Royal College Street, London, N.W.1 (available ex stock).
31. Pair of stiff boards enclosing periodicals, held together by strap on which is stapled plastic-protected label indicating contents.	Scheme in use at Danish National Centre for Building Documentation, Charlottenborg, Kongens Nytorv 1, Copenhagen.
32. Magazine cover with transparent front (protection during display) From £1 1*s* to £3 4*s* 6*d* depending on size of original.	Libraco Ltd
33. Binder file File: 16*s* 5*d*; dustproof cover: 5*s* 4*d*; refills: 39*s* 11*d* per dozen pairs.	Jetleys (Great Britain) Ltd, Huddersfield, Yorkshire. London office: 172 Buckingham Palace Road, London, S.W.1. (SLO 6749.)
34. 'Presson' self-adhesive label holder 14*s* per set of 12 lengths, 12 in by ½ in 18*s* 6*d* per set of 24 lengths, 6 in by 1 in	Adapta-Charts Ltd, 129 Hammersmith Road, London, W.14. (FUL 1063.)
35. Filmolux self-adhesive film Price varies with width of roll: e.g. roll 19 in wide, 27½ yds long, transparent glossy finish, 75*s*.	Aga Standard Ltd, 16–17 Devonshire Square, London, E.C.2. (BIS 8395.)

Letters to the Editor

CONTROL PROCEDURE FOR LIBRARY LOANS

Madam,

A loans procedure commonly followed in small special libraries is to make out an issue slip in triplicate, attaching one copy to the item issued and putting the other two into a control index maintained in two parts, one part in alphabetical sequence of titles and the other of dates of issue.

A much simpler method that may be novel to some librarians, is to make one carbon copy only of the issue slip (possibly on card), marking the back of this copy with a 'week number' and putting it into a one-section index in alphabetical sequence of titles. The back of the index slip, or card, is 'framed' to receive week numbers and notings of any recalling or reserving action taken. The weeks of the year are serially numbered as formerly in food-ration books and marked up on the library calendar. The loans clerk marks the back of the index slip with the number of the current week *plus* (*say*) 3. On a given day in each week the index is turned round back to front and all items then of current week number are weeded out. After recalling action has been taken, and noted, on each, they are returned to the index with week number advanced by N: this automatically brings them forward again on the review day N weeks later. 'N' is decided by the clerk.

This system ensures systematic control of overdue loans and enables a supervisor to ascertain very easily the state of up-to-dateness of the recalling procedure. It does not enable imposition of a precise maximum period of loan, but in most cases this is of no consequence: the important thing is to have systematic review of overdues at regular intervals.

A useful extension of the system is to use envelopes instead of paper slips or cards in the index, these being framed as before on the back. Manilla envelopes (cost 0.5 pence each) are suitable of index-card size with opening on one of the short sides and the flap removed. Envelopes accommodate supporting slips such as the loan order slip or letter, carbons of recalling notes or reservation requests. In fact, each envelope becomes container for a miniature case file of the loan item. Envelopes are excellent from the point of view of index manipulation.

J. B. Reed,
H.Q., DSIR.

11th February 1960.

PAPERS OF THE INTERNATIONAL CONFERENCE ON SCIENTIFIC INFORMATION

Washington, 16th to 21st November 1958

Reprints of the following papers are available on loan from Aslib library pending receipt of the published proceedings.

BERNAL, J. D. The transmission of scientific information: a user's analysis. 19 pp.

BONN, G. S. Training for activity in scientific documentation work. 48 pp.

BOQUET, P. Creation of an international center of scientific information. 5 pp.

BRODMAN, E., *and* TAINE, S. I. Current medical literature: a quantitative survey of articles and journals. 13 pp.

BRUNNING, D. A. Review literature and the chemist. 26 pp.

CIGANIK, M. Scientific, technical, and economic information in a research organization. 35 pp.

CLARIDGE, P. R. P. Information handling in a large information system. 17 pp.

CLEVERDON, C. The evaluation of systems used in information retrieval. 12 pp.

CRANE, E. J., *and* BERNIER, C. L. An overall concept of scientific documentation systems and their design. 23 pp.

CROWTHER, B. M. International cooperation in physics abstracting. 9 pp.

DOSS, M. A. The importance of peripheral publications in the documentation of biology. 6 pp.

ESTRIN, G. Maze structure and information retrieval. 11 pp.

EVANS, A. B. AGARD. International cooperative abstracting on building: an appraisal. 5 pp.

EVANS, A. B. AGARD, *and* FARRADANE, J. Training the scientific information officer. 6 pp.

FAIRTHORNE, R. A. Algebraic representation of storage and retrieval languages. 14 pp.

FISHENDEN, R. M. Methods by which research workers find information. 17 pp.

FOSKETT, D. J. The construction of a faceted classification for a special subject. 22 pp.

FRANK, O. Cooperation and coordination in abstracting and documentation. 14 pp.

GARDIN, J. C. On the coding of geometrical shapes and other representations, with reference to archaeological documents. 13 pp.

GARFIELD, E. A unified index to science. 14 pp.

GAUDENZI, N. The efficiency of metallurgical abstracts. 13 pp.

GLASS, B., *and* NORWOOD, S. H. How scientists actually learn of work important to them. 3 pp.

GRELL, N. F. Differences in international arrangements for financial support of information services. 6 pp.

HARRIS, Z. S. Linguistic transformations for information retrieval. 14 pp.

HERNER, S., *and* HERNER, M. Determining requirements for atomic energy information from reference questions. 7 pp.

HERNER, S. The information-gathering habits of American medical scientists. 9 pp.

HERNER, S. Subject slanting in scientific abstracting publications. 21 pp.

HOGG, I. H., *and* SMITH, J. ROLAND. Information and literature use in a research and development organization. 32 pp.

KOELEWIJN, G. J. The possibilities of far-reaching mechanization of novelty search of the patent literature. 26 pp.

LEDLEY, R. S. Tabledex: a new coordinate indexing method for bound book form bibliographies. 23 pp.

LEE, M. O. Responsibilities for scientific information in biology: proposal for financing a comprehensive system. 11 pp.

LEIBOWITZ, J., *and others.* Variable scope search system: VS_3. 26 pp.

LEITCH, I. The place of analytical and critical reviews in any growing biological science and the service they may render to research. 18 pp.

LOWRY, W. K., *and* ALBRECHT, J. C. A proposed information-handling system for a large research organization. 22 pp.

LYKOUDIS, P. S., *and others.* Analytical study of a method for literature search in abstracting journals. 25 pp.

MASTERMAN, M., *and others*. The analogy between mechanical translation and library retrieval. 19 pp.

MENZEL, H. Planned and unplanned scientific communication. 24 pp.

MEREDITH, G. P. Semantic matrices. 30 pp.

MEWS, H. Responsibility for the development of scientific information as a national resource. 5 pp.

MILLER, E., *and others*. Conventional and inverted grouping of codes for chemical data. 15 pp.

MOOERS, C. N. A mathematical theory of language symbols in retrieval. 38 pp.

OETTINGER, A. G., *and others*. Linguistic and machine methods for compiling and updating the Harvard automatic dictionary. 30 pp.

OHLMAN, H. Subject-word letter frequencies with applications to superimposed coding. 13 pp.

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RIGBY, M., *and* RIGBY, M. K. Cost analysis of bibliographies or bibliographic services. 12 pp.

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SMITH, C. G. Descriptive documentation. 20 pp.

SMITH, M. H. An evaluation of abstracting journals and indexes. 30 pp.

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TAUBE, M. The Comac: an efficient punched card collating system for the storage and retrieval of information. 10 pp.

URQUHART, D. J. Use of scientific periodicals. 14 pp.

VICKERY, B. C. The structure of information retrieval systems. 15 pp.

WALDO, W. H., *and* DEBACKER, M. Printing chemical structures electronically: encoded compounds searched generically with IBM-702. 20 pp.

WELT, I. D. A combined indexing-abstracting system. 11 pp.

WESSEL, C. J., *and* BEJUKI, W. M. Evolution of document control in a materials deterioration information center. 31 pp.

WHALEY, F. R. Retrieval questions from the use of Linde's indexing and retrieval system. 7 pp.

WHATMOUGH, J. Interlingual communication in the sciences. 20 pp.

WRIGHT, R. C., *and* WILSON, C. W. J. Classification with Peek-a-boo for indexing documents on aerodynamics: an experiment in retrieval. 21 pp.

WYART, J. Scientific documentation in France. 7 pp.

YNGVE, V. H. The feasibility of machine searching in English texts. 9 pp.

MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

MARTIN GREENWOOD, FIL, 73 Undergreens Road, Barrow-in-Furness, translates science and technology from German, French, Spanish, Italian, Dutch, for major professional engineering and industrial establishments in Britain and Europe.

TRANSLATIONS from and into French, Italian, and Turkish. Typing also undertaken in these languages. Particulars from F. P. Scott, 4 Uphill Grove, Mill Hill, London, N.W.7.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC (ENG.), FIL, 140 Wightman Road, London, N.8. Tel. Stamford Hill 8564.

WILFRED E. GOODAY, ARSM, DIC, MIMM, Member Translators' Guild. Technical translation from French and Roumanian. Institute of Linguists rates. 161 Rivermead Court, London, S.W.6. Renown 1912.

Appointments vacant

BP has a vacancy for a TECHNICAL INFORMATION OFFICER at its head office in London. Applicants under thirty years of age should preferably be in possession of a degree, and previous experience either as a technical information officer or in some other technical capacity is considered desirable. Duties will include administrative duties within the technical information and library service, participation in the preparation of routine technical literature, bulletins, indexes, reviews, and abstracts, and supplying information of all kinds in response to specific inquiries. Salary according to age, qualifications, and experience. Non-contributory pension fund. Assisted house purchase scheme. Removal expenses and settling-in allowance payable in certain cases. Luncheon club. Write, quoting ref. H.5095, to Box 6274, c/o 191 Gresham House, E.C.2.

THE BRITISH PETROLEUM COMPANY LIMITED has an immediate vacancy for a FEMALE PATENT ABSTRACTOR SEARCHER. Age 25–35. Science degree with chemistry essential. Knowledge of French and/or German and technical abstracting desirable. Holidays recognised; five-day week; luncheon club with 1*s* lunches; non-contributory pension scheme; excellent sports and social facilities. Applicants should write stating age and qualifications, quoting H.F.83 to Box 4225 c/o 191 Gresham House, E.C.2.

THE HEADQUARTERS of an international group of companies, whose main interests are metallurgical, has vacancies in its INFORMATION DEPARTMENT for translators, male or female, who would also be interested in general information work. A technical background and a thorough knowledge of German or Spanish is desirable. Knowledge of other languages will be of assistance. Present location is in the Midlands and plans are in an advanced stage for re-location near London. Write giving full details of age, experience, qualifications, and salary expected. Box 460, Aslib.

INTERNATIONAL FEDERATION FOR DOCUMENTATION invites applications for the post of GENERAL SECRETARY. This position entails co-operation on a world-wide basis on all questions of documentation, scientific publication, etc. Applicants should be of a vigorous personality, preferably between 40–50 years, able to read, write, and speak English and French and preferably to understand German, Russian, Dutch, and Spanish. The person appointed should be a university science graduate or the equivalent, of good standing, with administrative experience, a capacity for public relations on an international basis, and a good public speaker. He need not be a professional documentalist, but should have a general understanding of the subject and of the information needs of scientists and others. He will be expected to reside at The Hague, headquarters of the Federation. Applications should be forwarded to the General Secretariat of the Federation, 6 Willem Witsenplein, The Hague, Netherlands.

LIBRARIAN/INFORMATION OFFICER of graduate standard is required by an expanding chemical manufacturing company. The library is a modern one and conditions generally are pleasant. Patent and abstracting experience would be an advantage. Pension and life assurance schemes in operation. Applications in writing should be sent to AP/L, Vinyl Products Ltd, Butter Hill, Carshalton, Surrey.

LIBRARY RESEARCH. Applications are invited from Fellows of the Library Association for a Research Fellowship value not exceeding £650. Details may be obtained from the Secretary of the Library Association, Chaucer House, Malet Place, London, W.C.1.

A SCIENTIFIC AND TECHNICAL INFORMATION OFFICER is required at Pergamon Press, Oxford, to assist in providing a scientific and technical information service related to the Press's publishing programme. Routine work includes abstracting, answering technical inquiries, literary searching, preparing of bibliographies. Initiative in anticipating information needs of editorial departments is required. Applicants should have GCE at A level or equivalent qualifications. A chemistry, engineering, or physics degree would be an advantage. Experience of technical information work essential. Commencing salary £1000 to £1250 per annum, according to experience. Five-day week. Superannuation scheme. Please send applications to the Chairman, Pergamon Press, Headington Hill Hall, Oxford.

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Wanted

British plastics, vol. 31, nos. 1, 2, 8, 9, 11, 12. *Journal of applied mechanics* [Trans. ASME. Series E.], vol. 24, March 1957. Wanted by the Andersonian Library, The Royal College of Science and Technology, Glasgow, C.1.

For Sale

Translator's technical dictionaries, reference books, etc. Lists (6*d*) from Murray, 24 Cambridge Road, Farnborough, Hants.

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 **June 1960** **Number 6**

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

1961

FEBRUARY

FRIDAY 3rd. Scottish Branch Annual General Meeting. See paragraph below.

SEPTEMBER

WEDNESDAY 6th – SATURDAY 16th. FID and Aslib Conferences, concurrently, in London.

Miss Irene M. Shrigley

Members will have heard with regret of the death, on Friday 6th May, of Miss Irene Shrigley, MA, who had been actively associated with Aslib for the past eighteen years. The following tribute is sent by Mrs Stowell, Chairman of the Economics Group, and a close personal friend of the late Miss Shrigley:

With the death of Miss Shrigley the library world has lost a great personality.

Most members of Aslib will remember her as a member of Council, and in turn, Honorary Secretary and Honorary Treasurer. In recent years she had been a member of the Committee of the Economics Group.

Many others outside Aslib will remember her for the great work she did as Librarian of the Institute of Bankers. During the twenty-five years she was there she raised it to its present unique position. For the last three years she has devoted all her time and energies to the Business Archives Council, and only a few weeks ago said that now it was ready to burst forth into great things.

Miss Shrigley had a wide knowledge, tremendous energy, a selfless devotion to the job in hand and was a good speaker. These qualities, coupled with her interest in people and their doings and her willingness to help, made her, as we have already said, a great personality who will be keenly missed by a very large circle of personal friends and business acquaintances.

Scottish Branch

The Annual General Business Meeting and Conference will be held next year on Friday 3rd February in the James Watt Building of the National Engineering Laboratory, East Kilbride. Anyone wishing to stay a night either before or after is advised to get in touch with the Stuart Hotel, East Kilbride, in good time. It is planned to hold a small exhibition of ideas and equipment at the conference.

Aeronautical Group

The ninth annual conference of the Group was held at the College of Aeronautics, Cranfield, from 8th to 10th April. Sixty-six members attended. The proceedings opened with a showing of two films: *Transonic flight* and *Beyond the speed of sound,* being parts 2 and 3 of the High Speed Flight series produced by the Film Unit of Shell International Petroleum Co. Ltd.

Mrs E. Mack of Metal Industries Ltd gave an account of the organization of information services within a group of companies, describing the work of feeding information to numerous companies with varying subject interests as well as keeping a head office up to date. Mr J. E. Allen of A. V. Roe & Co. Ltd, Weapons Research Division, spoke on 'some information problems of space technology', illustrating his talk with numerous slides and scale models of aircraft. He showed how specialized information from a wide subject field was used in space technology. Mr Allen's lecture also formed an admirable introduction to that of Professor R. O. Kapp, on the 'conveyance of information'. In this paper Professor Kapp stressed the need for logical arrangement and presentation and gave a four-point guide for conveyance of scientific information: *i,* define the situation; *ii,* explain what experiments have been made and why; *iii,* comment on the results; and *iv,* summarize the report. Linguistics were of secondary importance and conciseness could be overdone.

Group discussions took place on issue systems, led by Mr T. I. Bell, Royal Aircraft Establishment; periodical receipt and circulation, led by Mr J. S. Rosser, A. V. Roe & Co. Ltd; the work of the information officer, led by Mr R. A. Wall, A. V. Roe & Co. Ltd; and information bulletins, led by Mr D. J. Thomas, Bristol Siddeley Engines Ltd.

At the Annual General Meeting, which was included in the conference programme, Mr C. W. Cleverdon outlined the progress of the Aslib Cranfield Research Project, and the sub-committee on classification presented a report, printed below under 'UDC schedules for space flight'. The following officers were elected for the coming year: Chairman, Mr C. W. Cleverdon, College of Aeronautics; Treasurer, Mr J. S. Rosser, A. V. Roe & Co. Ltd, Chertsey; Secretary, Miss M. Dyke, Royal Aircraft Establishment, Bedford.

The conference ended with a talk by the Director on 'the aims of Aslib, the services it provides, and its relation to the Groups', in which he outlined research projects, training and education, translation, and conference and group activities. He also appealed to members to think of Aslib as 'we' and not 'they', implying the responsibility of all members for the usefulness of Aslib.

UDC Schedules for Space Flight

Report of the Aslib Aeronautical Group Sub-committee on Classification for the year 1959-60

In view of the current and future interest and activity in the field of space flight and its associated concepts the sub-committee decided that the application of the present UDC schedules to this subject field should be considered, with reference to possible extensions, particularly of the 629.19 Astronautics section. The major part of the sub-committee's activity this year has therefore been concerned with this aspect. Two classification schemes based on the UDC have been submitted by members during the year to aid the discussion, namely: *i*, a detailed scheme for Astronautics Engineering classification prepared by Mr R. A. Wall of A. V. Roe & Co. Ltd; and *ii*, an outline scheme for Astronautics, conforming closely to the present 629.13 schedule, prepared by TIL 1 (b), Mottingham. The sub-committee is now well on the way to completing a proposed schedule.

Very little progress has been made in reaching international agreement on either the 629.13 or 532/533 schedules, no reply having been received from the German working party to the 629.13 counterproposals submitted by the sub-committee as far back as February 1959. The Aslib 532/533 proposal of 1957 has been found satisfactory by several British users, but has run into much criticism abroad, mainly on the ground that it is too detailed as an interim measure pending a thorough revision of these sections. The sub-committee intend to resubmit the proposal after considering whether modifications should be made to meet the strongest points of objection.

Following a meeting in London in February 1960 with representatives from TDCK [Technisch Documentatie en Informatie Centrum voor de Krijgsmacht], The Netherlands, it was suggested that the Agard [Advisory Group for Aeronautical Research and Development] Documentation Committee might help to promote international co-operation in UDC, and it was decided that the documentation committee should be asked to revive their classification sub-committee for this purpose.

The sub-committee were sorry to lose the services, as Chairman, of Mr Holloway, who relinquished the position on moving to his new post as Head of ACSIL [Admiralty Centre for Scientific Information and Liaison], and welcomed in his stead as Chairman, Mr R. A. Wall of A. V. Roe & Co. Ltd.

British Museum Reading Room: evening opening

From Wednesday 6th July onward for a trial period, the Reading Room and North Library of the British Museum will remain open on Wednesdays and Fridays until 9.30 p.m. Requests for books and applications for readers' tickets or temporary admissions will be accepted on these days until 8.30 p.m. Material kept in the Map Room and Music Room will, however, be available in the evening only if applications are handed in before 3.45 p.m. or received by post not later than the morning of the day on which they are wanted.

Review of Progress in Microtechniques

For the past two years, Mr G. H. Davison of the United Steel Companies Ltd has produced a valuable review of the previous year's progress in developments relating to micro-opaques and microfiches. The latest of these annual reviews, with the title *Microtext in the form of opaque cards and transparent microfiches: review of progress,* 1959, is now available. It is considerably larger (82 pages) than previous issues and is a most thorough survey of developments in this field. Apart from numerous items of useful information, lists of material available on micro-opaques and microfiches and a comprehensive list of reading devices for both microforms are included. Members interested in obtaining a copy of this review should write direct to Mr Davison, United Steel Companies Ltd, Research and Development Department, Swinden Laboratories, Moorgate, Rotherham, enclosing 8*d* in stamps.

Index of New Company Registrations

The *Investors' Guardian* ceased publishing its quarterly index of new company registrations at the end of 1959. A similar index, compiled from the weekly editions of *Investors' Guardian* is now published quarterly, in duplicated form and at an annual subscription of £1, by Hadley's Indexing Service, 23 Kinlet Road, Bestwood Park, Nottingham.

Sponsored Research

Sondes Place Research Institute has recently published an illustrated brochure giving facts relating to the work of the institute and the facilities including library services it is able to offer for sponsored research. Copies of the brochure will be sent to interested inquirers, free of charge, on application to the Secretary, Sondes Place Research Institute, Dorking, Surrey.

American Award for British Librarian

Mr Leslie T. Morton, the Librarian of the National Institute of Medical Research, Mill Hill, London, has been honoured by the Medical Library Association of America with the Marcia C. Noyes Award for his outstanding services to medical bibliography and librarianship. The presentation was made at the Annual Conference of the American Medical Library Association at Kansas City on Thursday 19th May. This award has hitherto only been made to medical librarians in the United States.

NEW MEMBERS

Corporate

Name	*Locality*	*Representative*
Air Products (G.B.) Ltd	London	S. Z. Kobran
Ardente Acoustic Laboratories Ltd	London	M. Cohen
Army Central Library	London	M. G. H. Wright
Artrite Resins Ltd	London	J. B. Sarson
Basil Butler Company Ltd	London	K. S. L. Holley
Benson-Lehner (G.B.) Ltd	Southampton	E. J. Petherick

NEW CORPORATE MEMBERS—*contd.*

Name	*Locality*	*Representative*
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British Manufacture & Research Co. Ltd	Grantham	D. E. Clarke
Bromley Technical College	Bromley	F. R. Hatt
Byggecentrum	Denmark	K. Christensen
California. University. School of Library Service	California	L. C. Powell
Carlson, John C., Ltd	Ashton-under-Lyne	G. Osgood
Cementation Company Ltd, The	Rickmansworth	J. Scott
Central Building Research Institute	India	Director
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Darenth Weighing Equipment Ltd	Erith	J. Beaumont
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Independent Television Authority	London	Librarian
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Institute of Materials Handling	London	H. M. C. Harwood
International Fellowship of Reconciliation	London	Rev. E. P. Eastman
Ipswich Civic College	Ipswich	C. Bleasdale
Jute Industries Ltd	Dundee	A. D. D. McKay
Kirkcaldy Public Libraries	Kirkcaldy	Librarian
Metal Manufactures Ltd	Australia	R. J. Pearson
Miles Laboratories Ltd. Production Division	Bridgend, Glam.	J. T. Rees
Ministry of Agriculture, Northern Ireland. Forestry Division Library	Belfast	K. F. Parkin
Norwegian Industries Development Association	Norway	Dr tech W. Holst
Parkinson Cowan Appliances Ltd	Birmingham	Librarian
Philips Electrical Ltd	London	Dr R. C. G. Williams
Pratt Institute Library	New York	R. Scheiman
Ranco Ltd	North Berwick	G. MacPherson
Reading University Library	Reading	Miss E. M. Cairns
Research & Documentation Centre	Wembley	Dr I. Lapenna
Scientific Book Supply Service Ltd	London	T. F. de Loche
Teacher, Wm., & Sons Ltd	Glasgow	G. T. Dunlop
Trinidad & Tobago Industrial Development Corporation	TWI	Librarian
Tullis Russell & Co. Ltd	Markinch, Fife	Dr G. A. Cramond
Universitatsbibliothek der Technischen Universitat Berlin	Germany	Dr-Ing L. Borngasser
Vickers Research Ltd	Ascot	Dr J. R. Green
Vyzkumny Ustav pro Sdelovaci Techniku A. S. Popova	Czechoslovakia	Director
Welsh Economic Development Council	Cardiff	Miss H. M. James
West African Institute for Oil Palm Research	Nigeria	Miss B. Mandy
Western Australia. University	Australia	Librarian

NEW MEMBERS—*contd.*

Individual

Name	*Locality*
Alford, M. H. T.	Cheltenham
Allen, F. C.	Abergavenny
Braine, W. A.	Chesterfield
Coosen, C.	Netherlands
Dove, E. C.	Hornchurch
Eybers, R.	South Africa
Fry, V. E.	London
Gooday, W. E.	London
Hirst, J.	Australia
Hogan, T. M.	Hythe, Kent
Hughes, Miss J. V.	Welwyn Garden City
Isaacs, J. M.	Aldershot
Rastorgoueff, V. L.	London
Roberts, G. E.	Morecambe
Scott, F. P.	London
Taylor, Miss H. E.	Beckenham
Thomas, A. R.	London
Wilmshurst, A. P.	East Horsley

A REPORT ON SPECIAL LIBRARY WORK IN THE USSR

ANTHONY THOMPSON, MA, FLA

Aslib Winter meeting, London, 1st March 1960

THE CHAIRMAN, Mr K. W. Humphreys (University of Birmingham): It is hardly necessary to introduce Mr Anthony Thompson, but some of you may care to know the background, and the reason why Mr Thompson and I are in front of you this evening.

Last February the Soviet Ministry of Culture and the British Council signed an agreement for exchanges of various kinds, mostly of a cultural nature. Among them were to be exchanges of librarians. This was sought by both sides. It was agreed that three librarians from Russia should come here, and three British librarians should go to Russia.

The Library Association, Aslib, and SCONUL were each asked to nominate one person, and this evening Mr Thompson will tell you something of his experiences. Three of us went: Mr Pottinger of the Scottish Central Library, Mr Thompson, and myself. Without further introduction I shall ask Mr Thompson to speak about the Russian libraries, and especially the scientific libraries of that country.

Mr ANTHONY THOMPSON: The subject that I have been given by Aslib, which sent me to the Soviet Union, was a report on special library work in the USSR. This is, of course, a vast subject and, after studying it for a fortnight only, one cannot give very much detail. Perhaps I might sketch the larger picture, and fill in some of the details at the end. I should also like to give this talk a fancy title; it is 'Networks and Old Lace'. You will see the reason in a few moments.

I hope you will remember throughout that we made a point of looking for the good things, in order to bring back information which might be of use. I say that because otherwise it may seem that we are painting a rather too rosy picture.

Our Chairman, Mr Humphreys, has explained the arrangement for the exchange of librarians, and I should just like to enlarge upon that a little. There was, first, an exchange of book exhibitions. This, as you know, has been part of the development of cultural exchange between the two countries. The British exhibition was held first, in Moscow, and the Soviet exhibition has recently closed in the Festival Hall. With the librarians, it was the other way round: the Russians came here first and we went to them afterwards.

We have had a little publicity in the Press. A strange photograph has appeared in one library journal purporting to be ourselves arriving from Moscow. Hasty journalists, of course, make mistakes, since it was actually taken when we left England; moreover, the photograph missed the emblem on the plane, which was to us the most exciting part—revealing that we went over in one of the Soviet TU 104 jets and arrived in Moscow only three and a quarter hours after leaving London Airport.

When we touched down we were met by two representatives, not of the Library Association, as would have happened here, but of the Ministry of Culture. This was the first point of difference between our world and theirs, apart from the snow and frost and other decorative climatic elements. The representatives of the Ministry of Culture were, of course, not librarians, but the Ministry of Culture is, in fact, the body presiding over the libraries of the USSR.

Just to give you a little local colour, I might say that we arrived at night and were taken about twenty kilometres into the city by car. Our first impressions were of vast new blocks of flats on every hand, especially in the suburbs of the city. After we had arrived and dined at the rather old-fashioned and grand Hotel Metropole, we went out into the snow to make a magic circle around the Kremlin.

This was a magnificent first impression, with batteries of floodlights shining from the top of the State universal shop 'Goum' on to the Kremlin; of the red walls and red mausoleum; of the white and yellow classical buildings up behind them and, in the background again, the golden domes of the cathedrals inside the Kremlin—not forgetting, of course, the six red stars shining high up on the tops of the towers of the Kremlin walls.

But to come down to libraries: the next morning we were taken to the Ministry of Culture, which was the organizing body for our trip, just as it is the organizing body for libraries. The programme was there revealed to us. It had not been known to us in detail beforehand and I must say that it looked rather bewilderingly full.

We were to spend five days in Moscow, where we were to see the Lenin Library (the National Library), two public libraries, then the university, then a branch of a public library—indeed, all types of libraries. Then we were to see a factory library, and after that the library of Social Sciences of the Academy of Sciences, the Institute of Scientific Information of the Academy of Sciences, and the new scientific and technical library of the Soviet Union. Lastly, we were to see the bibliographical body called the 'Book chamber'. After that there was to be some kind of celebration in what was called the House of Friendship, which is concerned with relations with foreign countries. After that we would be packed on to the Leningrad train by night. We were to have three days in Leningrad looking at the same admixtures of libraries, and then three days in Kiev, the capital of the Ukraine, doing the same sort of thing. Lastly, we were to go to a dinner arranged by the Ministry of Culture. Incidentally, the highlight of this turned out to be a magnificent show of wit between male and female librarians, one side saying that all librarians ought to be women, and the other that all librarians ought to be men!

As to general impressions of libraries, first impressions are superficial, but my impression was this: the first thing one saw on entering a library was a notice, 'Will you please undress'! This meant, of course, that one ought to take off one's fur coat, fur hat, goloshes, and so on. One was then ushered into a rather old-fashioned building, usually with indoor plants, green baize tablecloth, and jugs of water standing beside the librarian. Curtains would be draped across the windows and so on. Altogether, it was a rather old-fashioned atmosphere—one of Old Lace.

The next thing that strikes one is the amount of display work. On entering almost any type of library one is struck by the displays. When we were there, certain subjects were specially in evidence. One related to the centenary of the birth of Chekhov, which was to be celebrated on 29th January. Almost every library was showing something associated with Chekhov. Also, one found display material about the seven-year plan, with economic charts and figures, slogans, and so on. They were especially evident in the public libraries. The most prevalent slogan, of course, was, 'Fulfil the seven-year plan in five years'.

Let us leave the old lace for a moment and turn to the networks. The only way to convey something about libraries today is to explain the networks into which they have been organized. And it is no good telling you only about libraries, because so much of their efficiency clearly depends on the network into which publishing, bookselling, and book distribution have been drawn. For this reason I must say a word or two about publishing and bookselling.

We tend to think of this being done by the State, but it is in fact done by many public institutions. The State is certainly a publisher in its own right and, as many of you will know, the State divides most of its publishing houses up by subject; but there are many other publishers, such as the Republics of the Soviet Union, their governments and many learned institutions—so many of which are in the network under the Academy of Sciences. Local town councils, city councils, and other such bodies are also engaged in publishing; in short, there are about three hundred publishing houses run by official institutions.

This is associated with bookselling. You have only to walk up Gorki Street—which has been made forty-five metres wide by the simple expedient of bodily moving buildings back!—and one of the first things that you see on your right, as you move away from the central squares of the city, is what is called the Akademkniga, the bookshop of the Academy. It is full of the books which the Academy publishes. I shall say more about the Academy later.

The next unit in the book production network is the body which we call the book chamber—the Knizhnaya Palata. It is a very vital link in the network and you will see in a moment how closely it affects libraries. Briefly, it is the central bibliographical body and has six very important functions, all of which affect all types of libraries. (I know that some of you will think that I am not going to say anything about special libraries, but we are finally going to converge on them from all directions.)

The first function is the registration of books and the organization and distribution of the free depository copies. It is similar to the function of the Copyright Office of the British Museum. This is, of course, an old activity. The free copies system started in Russia about 175 years ago, as it did here, but only in a much smaller way. Before the Revolution only three libraries received depository copies, whereas now all the publishing houses of the USSR are obliged to send an appalling number of copies—at least forty and often more—so that books can be sent to specialized institutions as well. Some of these institutions, specially chosen, receive books related to their own subject only. An example is the Institute of Marxism and Leninism; yet another is the House of the Children's Book, and another example in the special library field is the Central Agricultural Library. Then there are what are called 'paid depository copies'. This mystified us at first because we could not understand how one could get depository copies and yet pay for them, but I shall explain that in a moment when we come to the subject of 'book collectors'.

The second function is to register all printed matter. This is done, for all Russian material, in Moscow, whereas the 'book chambers' of the Republics do the same for their own areas.

The third function is the reproduction of printed catalogue cards. This function is parallel to what the British National Bibliography now does for us. The Soviet Book Chamber produces, centrally, printed catalogue cards for not only all Russian books, but theses, and articles in periodicals—which was rather a shock to us—not to mention book reviews. This, of course, enables all types of libraries, including special libraries, simply to subscribe to the printed catalogue cards and make up a card catalogue for themselves of periodicals articles or book reviews.

The fourth function is the collection of statistics of printed matter. This department produces a publication which you have probably all handled called the *The press of the USSR*—Pechat' SSSR; it records all the statistics of the book world and comes out annually.

The fifth function is a library function. We were surprised, because we thought that surely it was being done by the Lenin Library, only half a kilometre away on the other side of the Kremlin. It is the colossal task of preserving all the printed matter that comes to the Book Chamber, which therefore also has a storage library function.

The last link in the chain of book production is what the Russians call the 'Collectors'. This word has been translated in the recent book by Horecky on the *Libraries and bibliographic centres in the Soviet Union* as 'Book Supply Agencies'. They are certainly that, but it is better to call them 'book collectors', for this provides a closer link with the Russian word.

The book collectors are in fact book supply agencies dealing with the paid depository copies. The function of the 'Collector' is to reserve for libraries enough copies of books which they may want. This is a double function in that it benefits the libraries by preventing them from applying for things too late and finding them out of print—and also benefits the publisher, because he knows approximately how many copies to print. So far as the organization is concerned, they are divided into one group of Collectors for the public libraries (which in the Soviet Union are called mass libraries); and then there is another group for the learned libraries, and these are divided into subjects. The practice of division according to subject enables the 'Collectors' to handle books with a special knowledge of the material with which they are dealing.

At last I am going to mention libraries. I think you will agree that what I said as a preliminary was quite necessary. Here again networks come into the picture. The libraries fall fairly naturally into a classification—into mass libraries, which are approximately the equivalent of our public libraries, educational institution libraries, and special libraries. I shall not say much about mass libraries, except to describe what they are and then to go on to what is included in the network, because this also affects special libraries. The Russian term for mass libraries is 'Massovye biblioteki'. This word should not be confused with the Russian use of the word 'public'. A public library in the Soviet Union can be of any kind, and the word 'public' merely means that it is open to the public. We soon found that some of the libraries of the Academy of Sciences were not only open to the public but were actually called public libraries; for instance, the library of the Ukrainian Academy of Sciences is actually called the Public Library of the Ukrainian Academy of Sciences.

The public libraries are organized in a network. They start at the top with two well-known State libraries, the Lenin Library in Moscow and the Public Library in Leningrad, as well as the State Historical Library in Moscow. That is the kind of trinity at the top under which the network falls. Below that, you have, first, one main library for each Republic, some of which have not been in existence for very long. We saw one of the newer ones in Kiev in the Ukraine. Below this you have the library of the Province—or oblast—and then the Regional libraries of each 'krai', or district; then the library of the 'raion'; then, below that, the village libraries, the agricultural libraries of collective farms and other agricultural institutions, and libraries in industry. So that at the tail-end of this network, which extends from the national libraries downwards, you have a service to industry and agriculture. I shall say no more about mass libraries because I do not think it is really our subject, except in so far as it filters down to industry and agriculture.

When we turn to educational institutions we come straight into the special library field. There are, of course, many of these—universities, technical colleges, schools, and the like, but I shall give one simple example to provide information on some of the details of the inside of such a library. Then we shall go on to special libraries, and I shall give you more examples.

I shall now refer to the scientific library of Moscow University. The university library is an old institution, which has had its centre for a very long time in the city. Since the war a huge site has been acquired just outside the city at the end of the Metro line running to the south-west and situated just beyond a bend in the Moscow river. It is about fifteen minutes' journey, with direct connection between the old university and the new.

Incidentally, as one goes down by the underground one cannot help being dazzled by the amount of marble, being rather shocked by the heavy decorative work, and then being greatly relieved by the possibility of going up and down moving stairways without being faced, as we are in London, with innumerable advertisements for women's underclothing! There are no advertisements in the Moscow Metro, and what a relief it is! One gets out at the last station along the line and takes a short walk across the snow to the vast university building, with its central structure, in which one finds the library. You may have seen pictures of the skyscraper, with its tower in the middle and twin towers at either side. It is not quite so like a cathedral as perhaps the sketch indicates. The central building contains thirty-two storeys. On one of the side towers is a clock and on the other a thermometer registering on the day of my visit between minus 15 and minus 20 degrees centigrade. Inside the thirty-two storey building the library has its bookstack, which more or less runs down the centre. It is in fact slightly to one side, and has sixteen bookstack floors. I am describing it not so much because it is a university library but because it is arranged as a series of special libraries, which interests us. The special libraries adjoin the central bookstack at different levels, and lifts down the centre serve them all.

On the fourteenth and fifteenth floors of the building there is a special library, for instance, for mathematics and mechanical sciences. It is divided into two halves, with the bottom half for students and the upper half for the teaching staff of the university. This struck us as a rather neat arrangement for linking all the special libraries to a central bookstack.

I should like to mention one or two interesting features. The size of the student body is about 22,000. In this and neighbouring buildings on the Lenin Hills, as they are now called, some 6,000 students can be accommodated. One library service which I should specially like to mention is the service to students in relation to textbooks. It has apparently been found necessary to provide all textbooks free for students. By textbooks are meant books recommended for study. The library, in fact, has a separate department which supplies all the recommended books in the proportion of one to every four students. In addition, a special effort is made to help the extra-mural students, who cannot come to the library. Recommended textbooks are sent to them free by post.

I want now to pass on to what we would call the special libraries proper. In Russia, they are really known as 'learned libraries', and the Russian word, which is 'nauchnye biblioteki', is often wrongly translated as 'scientific', since it embraces the whole of knowledge, and not only what we would call pure and applied science. There are various networks of these special libraries, and I shall have to concentrate mainly on one. There are some outstanding large special libraries, such as the State Scientific Library under the Ministry of Education, the Central Polytechnic Library, a special library of patents, and finally networks of special libraries in industry, science and agriculture coming under the various ministries concerned. For instance, the Ministry of Transport has its own network of libraries throughout the country.

The network which we saw a little more of was that of the Academy of Sciences. As regards libraries, it is quite sharply divided into the part which is in Leningrad—really the main library—and the part which is in Moscow. For us, from western Europe, the set-up in Leningrad is simpler, since it is devoted approximately to pure and applied science. The library in Moscow is called the Library of the Social Sciences.

When you study it in detail you find, however, as everywhere in the USSR, that social sciences include not only politics, economics, sociology and so on, to which we are accustomed, but also language, literature, the arts, etc.—in fact everything except what we call pure and applied science. Thus the library of the social sciences in the Soviet sense is in Moscow, and that of the sciences in our sense is in Leningrad.

Now I shall turn to the one in Leningrad, which we visited shortly. The function of the library, and its network, was described to us, but I have had to supplement what we were told rather considerably from a Russian *Guide* to the library which was fortunately presented to us. It is one of the oldest learned libraries in the country, being established by decree of Peter the Great in 1714. It has collected its stock over two and a half centuries and it covers all branches of knowledge, although it is now concentrating on the pure and applied sciences.

It claims to hold more than 12,000,000 volumes, but we went rather carefully into this question and decided that the figure was perhaps inflated because the method used was the old one of counting little volumes to make the total seem greater. According to the Russian *Guide*, the library did not collect stock very systematically, or according to any strict plan, before the days of the Revolution. Another handicap was that the free deposit copies were not always received; the law was not strictly observed, so there were quite a number of gaps in the stock.

After the Revolution several fundamental changes were made in the work of the library. Lenin was himself, as you all know, a library user and showed a very keen interest in library development, even during the terrifically hard days of the Revolution and Civil War. He decreed in 1919 or 1920 that there should be a deposit, in greater quantity, of free copies in libraries. It was then that the depository copies organization, 'The All-Union Book Chamber', was begun. This ensured that a constant flow of fairly exhaustive book collections would go into the important libraries, including this particular one.

The library became, from that time onwards, the centre of a very wide network of academic libraries—meaning libraries of the Academy—mostly in and around Leningrad and Moscow. There are now two hundred and seventy libraries in the network, of which thirty-seven are in Leningrad and sixty-five in Moscow. The whole network is administered by a special body in Moscow called the Network Sector for Special Libraries of the Academy. This is the body which can tell us librarians sometimes where to address a letter destined for a particular institution. I do not think that there is time for me to go into much more detail about the Academy of Sciences in Leningrad except to point out one or two things about their services.

They have about 26,000 registered readers comprising, firstly, members of the Academy, but also other scientific workers who are accepted by the library as readers. They claim, in their annual report, to have made more than 2,500,000 loans in 1959. An interesting point is that reader records—as happened in all Soviet libraries that we visited—were kept in some detail; it is a permanent record of what has been borrowed and read. We were at once very interested in this, and suspected that it had a political intention. I have no doubt that it has had its political uses in the public libraries, because it was quite clear that one could quickly tell what people were reading. On the other hand, we did find that it had other useful purposes, from which we could perhaps learn ourselves. One was that book selection was made easier because there was a complete record of what people read. The librarian could tell immediately when extra copies of books were needed, and which subjects were most used, and so on.

Secondly, in several places it was pointed out that it enabled librarians to help readers to a greater extent than would otherwise be the case. This brings in a very important general point about libraries of all kinds. We judge the librarians of the Soviet Union to be in much closer touch with their readers than their counterparts in this country—for good or ill. The staff were compiling bibliographies for readers, and were even printing them. They were providing displays and exhibiting a very lively interest in the subjects of their library. In the Ukrainian Academy of Sciences the book issues are divided up by subject. The issues for one section of the sciences took place at one desk, literature at another, and history at another. Librarians who knew something of these subjects were put in charge of them.

This brought us round naturally to the question of open access and this is rather a puzzler. We were taken to a public library in Moscow and proudly told that it was the first public library to introduce general public access. It was known as the Pushkin Library and was in one of the Moscow districts. We asked when this had happened and were told '1959'. We felt that we had done a lot better than that, but when we discussed the question their attitude cast a rather new light on the problem. They had been used to being very closely in touch with readers and giving detailed subject advice. The first result of open access, however, was that they lost touch with their readers. They did not know any longer what the readers were interested in, and could not advise them so easily. One library invented a special device for regaining contact with readers. They had been used to classifying them according to different types—what we might call social groups. There was one group for housewives, one for students, one for children and so on. They had plastic, coloured rods in four colours, each representing one of the reader groups. As the readers came into the library they were asked to take one of these and use it as a mark on the shelf when they took off a book. This enabled the librarians—at least those with sharp eyesight—to see whether the reader was from a particular group. The person wielding a yellow plastic rod was recognized as a housewife, the holder of a blue rod as a student, and so on.

I should just like to mention one or two things in conclusion, especially two new scientific and technical libraries which are being developed at the moment. The Academy of Sciences is developing a new library in the Siberian capital Novosibirsk. There is also a new scientific and technical library in Moscow, which was founded a year ago. The one in Moscow seems to be nearer to us here and, as we went there, I will tell you one or two of the main facts about it.

It was founded following a decree of December 1958, about fifteen months ago. It was organized by the State Scientific and Technical Commission, which comes directly under the USSR Council of Ministers. The plan is that in a few years' time it is to accommodate about 10,000,000 items. There will be about eight branches in Moscow, divided on the basis of subject. It is to be a reference and lending library for science and technology. The services are therefore mixed.

It is to have reading rooms for those who can reach it in Moscow, but it will also lend to individuals anywhere who are worthy of using it. It is to make postal loans to institutions all over the Soviet Union, to provide photocopies at cost price, and carry out the usual bibliographical work on a rather large scale, including the production of subject bibliographies, an activity which we noticed also in many other libraries.

It is also to have a central department for giving advice on all library and bibliographical subjects connected with the library work. Advice is to be given to all other libraries throughout the Soviet Union on classification, cataloguing, the making of bibliographies, service to readers, and so on.

To give some idea of the size of this library, I might mention that already it has a staff of just over four hundred. We were told that its budget was about 24,000,000 roubles, or about £1,000,000 per annum. We may expect to hear more about it very soon in the Russian Press.

One cannot draw any very hard and fast general conclusions, but some conclusions come immediately to mind. First, on the book supply side, we found centralization, as in the libraries. This implies strict control of incoming literature. Control of the supply of Russian books is obtained through the 'book collectors', and control of incoming foreign books through Mezhdunarodnaya Kniga.

When one looked at bookstalls, one was immediately annoyed by the lack of good western European newspapers. It was impossible to get *The Times* or *The Guardian*. There was only the *Daily Worker*. On the other hand, it was quite a relief not to see the *Daily Mail* and the *Daily Mirror*. This was the general picture: you felt that you had gained one thing at the expense of another, but certainly it was almost impossible to ascertain very much in the way of news. I found that I could read what was of special interest to me in *Pravda*, the official journal, in a few minutes. The remainder of it was rather too heavy—mostly politics. *Izvestia* was a little more interesting. Some of the weeklies are now much more devoted to foreign news, as one might expect. I have in mind such weeklies as the *Literary Gazette* which is very interesting reading, and *Ogonyok*.

As for conclusions about libraries, they are mostly in old buildings, though everywhere we went we were told that new ones were to be built soon. I brought back details of some, but the only new one that we actually saw was the Moscow University Library. There is also the huge new building in the Siberian capital, and another to be started very soon for the Library of Foreign Literature in Moscow. Our impression was of very large library staffs, well trained, enthusiastic and knowing a great deal about their subject. The 'old lace' was being efficiently woven into living library networks.

In conclusion, I should like to quote a remark from one of three recent books on libraries in the Soviet Union. It is the least known of the three, *Forty years of building up libraries in the USSR*, published in Russian in 1958. After describing the various networks, and the success of their integration, the writer says: 'Only in a socialist political framework would it be possible, historically, to solve such a vast problem of organization in such a short time.' I should like to leave that thought with you.

DISCUSSION

In reply to questions, Mr Thompson and Mr Humphreys made the following points.

The programme arranged for the tour was very full and had allowed no time for other activities, but Mr Thompson had stayed for an extra two weeks on other work and had been able to visit those libraries that he chose and to talk to other librarians.

Some detailed information had been obtained during the visit on training of librarians in the USSR. This would be published by the Library Association, in agreement with Aslib. The training seemed to take longer and be more detailed than in this country.

There was no comprehensive directory of the libraries of Soviet learned institutions though there were lists of Academy libraries. Addresses of particular institutes should be available on application to the Network Sector of the Academy of Sciences in Moscow.

Western literature seemed to be well represented in Soviet libraries. Scientific works had been imported direct from Britain either in quantity or in single copies and reproduced on a large scale by the central agency in Russia. Large numbers of British books on politics, history, etc., were available. Works by most of the best-known western authors were available in translation, including those of Grahame Greene, Chesterton, and Kipling; also John Wain and others of the more modern writers. There were numerous copies of the works of Aldridge, author of *The diplomat*.

Soviet library activities were reflected in a number of publications. Some libraries, including Leningrad Public Library, issued their own journals; the Library of Foreign Literature on the other hand published a kind of newspaper, and *Sovietskaya Bibliografia* was largely devoted to the work of the learned libraries.

It was difficult to make a comparison of Soviet and English factory libraries. The library that they had visited was at the large automobile works in Moscow. They were shown the Trade Union library which was part of the mass library network and was clearly not concentrated on scientific and technical subjects. Most of the industrial libraries came under the various ministries, but within the network.

It was difficult for those outside the USSR to obtain books as soon as they were published; *Novye Knigi* was the major source of information on present and future publications. A number of people in the USSR had undertaken to search for books in the book centres and bookshops if they were given lists of the items needed. The speakers offered to supply inquirers with addresses of these volunteers.

The libraries seemed eager to enter into exchange arrangements with western countries. Exchange departments were often quite separate from the libraries, sometimes part of the acquisitions department.

Soviet libraries wishing to borrow foreign literature would do so through their own network. A village library in the Ukraine, for instance, would apply to the 'raion', or district, and the request would be passed by the Republic Library to the Lenin Library or whichever library seemed appropriate.

Requests for loan of Soviet literature from other countries would probably be channelled through the Lenin Library or the Public Library of Leningrad. It was unlikely that the Book Chamber would be able to collect for foreign authorities. The Institute of Scientific Information was prepared to supply microfilm to this country of any article mentioned in *Referativnyi Zhurnal*.

Microfilm was used for storage in some libraries, including that of the university at Kiev but they had seen no evidence of it being used for publication or of the use of microtexts. The Lenin Library had stated that nitrate-based microfilm was forbidden.

SIGNPOSTS: SOME SELECTIONS FROM THE 1959 SPECIAL LIBRARY LITERATURE

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FOR the first time since this series of annual reviews of the literature of special librarianship and information work began, the authorship has changed hands. It is fitting to pay tribute to the skill with which Mr J.Bird has compiled this review each year and to express the hope that the same standards of selectivity and pragmatic appraisal set by Mr Bird will be maintained. The aim of the survey remains unchanged: to bring to the notice of librarians, particularly those in the smaller organizations, the more significant and practically useful books, pamphlets, and articles which appeared during the past year, or, more strictly, were received in the Aslib library during the past year. Experience of the types of inquiry most frequently received in the Aslib library has been particularly useful in determining the type of publication that could most profitably be included. As has been stressed in previous years, the survey is not intended to be used as a bibliographical tool, since this purpose is adequately served by other existing services, but rather as a guide to current reading.

On the more general aspects of special library and information work, one is tempted to say that the 'book of the year' was one that never in fact appeared, namely the proceedings of the International Conference on Scientific Information held in Washington in November 1958. Although a number of the individual preprints of papers presented were available, the published proceedings did not appear in 1959, but the importance attaching to the conference was clearly reflected in much of the writing during the year on documentation and the use and dissemination of scientific information. A useful report[1] on the Conference, summarizing the papers presented in each area of discussion, was given by Messrs Fishenden, Crowther, Vickery, and Ronan at an Aslib winter meeting. Making a long overdue appearance, the proceedings[2] of the International Congress of Libraries and Documentation Centres held in Brussels in 1955 were published towards the end of 1958.

A report[3] by the European Productivity Agency of the OEEC gave some interesting facts and figures relating to the use and dissemination of technical information within smaller firms in Austria, Belgium, Germany, Italy, Norway, the United Kingdom, and the USA. Another report[4] produced some revealing, if not startling, information about the use made of technical literature by technologists in the electrical and electronics industries in this country. The findings of this report were conveniently summarized in a small booklet[5] in the DSIR *Problems of progress in industry* series. Another view of the European picture was given in a most informative survey[6] by Sewell of twenty-two technical information services in Germany, Luxembourg, Belgium, and Holland. Accounts of documentation activities in other countries are always of interest in suggesting possible ways in which the organization of such activities in one's own country might be improved. The highly developed system of the Soviet Union was fully and usefully described in a book by Horecky[7] which brought together a great deal of information, previously scattered in various publications, about Russian libraries and bibliographical activities. A closer look at certain aspects of Russian documentation was provided in an article by Kent and Iberall[8].

Still on the general aspects of library science, Unesco published a report[9] giving detailed statistics for national, university, special, and public libraries throughout the world, the latest statistics for most countries relating to the 1955–6 period. In the field of terminology, a welcome appearance was made in 1959 by a revised and considerably enlarged edition of *The librarians' glossary*[10], which should prove a useful reference tool for any librarian's desk. A Czech publication[11] gave equivalent terms in the field of library science in Czech, Russian, Polish, German, English, and French, while a compilation by Saringulian[12] gave a fuller coverage to English and Russian equivalents.

There was little writing on library buildings during the period under review. One of the most stimulating publications was a German publication by Mevissen[13], with text in German and English. Although the emphasis throughout is on public library buildings, the lavish provision of photographs and plans would make it useful in the planning of any type of library. A brief review of the principles of contemporary library design was edited by Yenawine[14]. Mention should also be made of the regular series of articles on the planning of new special libraries which have appeared in *Special libraries* since the beginning of 1958.

The year was a remarkable one for the number and variety of authoritative bibliographies which appeared, a certain proportion being new editions of standard works. Three of the outstanding works of the year were broadly based bibliographies. The third and final volume of Mlle Malclès' great work on bibliographical sources[15] appeared after an interval of six years, and covered pure science and technology, with emphasis on the former. Although the work was inevitably uneven in its treatment of this vast field, it remains a remarkable achievement and one of the most valuable general bibliographies. It received a detailed review by Walford in the September 1959 issue of the *Journal of documentation*. Walford himself made an outstanding contribution to general subject bibliography with his *Guide to reference material*[16]. By placing emphasis on British material, the *Guide* provides an invaluable supplement to the other leading works in this field—Winchell, Malclès, and Totok and Weitzel (of whose *Handbuch* a new edition also appeared in 1959[17]). Yet another major general bibliography to appear in a second edition was Hawkins[18], which is particularly useful for its annotations despite being restricted to American works. The new volume was a fundamental revision of the basic volume rather than a third supplement.

Collison[19] provided the fifth in the annual series of reviews of bibliographic services throughout the world, this latest report covering the year 1956. A fifty-page supplement[20] to Pinto's guide to national bibliographic services appeared, covering the years 1950–5, and Weitzel[21] wrote a survey of German national bibliographies, indicating the most appropriate and fruitful uses of each.

Subject bibliographies were numerous and the task of selection is a difficult one. There were new editions of guides to the literature of various scientific fields, notably Dyson[22] (chemistry), Parke[23] (mathematics and physics), and Smith[24] (zoology), as well as a new edition of a general guide to the literature of science by Jenkins[25]. The latter publication lists, for each major scientific field, general reading material, other guides to the literature, histories, dictionaries, comprehensive textbooks, bibliographies, indexing and abstracting services, reviews and surveys, handbooks and tables, directories, lists of serials, and aids to selection. A new and comprehensive guide to the literature of agriculture[26] was published, as well as a guide to sources of information in the social sciences[27]. Another publication which qualifies as a guide to the literature of its subject was the report[28] on a symposium held by the British Scientific Instrument Research Association on the literature of instruments and instrumentation. The Aslib Electronics Group produced a short handlist[29] of basic reference material in the electrical and electronics fields. Of more specialized interest was a guide to Russian medical literature[30] compiled by the National Library of Medicine in the United States. One aspect of subject bibliography was well covered in a work by Zischka[31] which lists reference works in dictionary or encyclopaedic form in all fields of knowledge.

Only a brief selection can be made from the numerous directories which appeared in the year, hardy annuals being of course omitted. The *Europa year book*[32] made its first appearance in 1959 and should provide the answer to a great many 'quick reference' inquiries. Although it covers much of the same ground as the *World of learning*, there is a great deal of information about organizations, both national and international, in Europe generally and in the individual countries. A new edition of the *Encyclopaedia of American associations*[33] gives very full information for that country. An enlarged new edition of *Who owns whom*[34] in two volumes increased the usefulness of that publication by revealing the relationship in both directions between parent and subsidiary companies. A guide[35] to societies in Great Britain devoted to the study of natural history and cognate subjects was published, and a French publication[36] listed research institutes in the medical, pharmaceutical, and veterinary fields in France. Special mention may be made of the second edition of *A guide to government libraries*[37] compiled by the O & M Division of the Treasury. Finally, there were two guides to directories, one restricted to Canada[38] and an American publication[39] listing business directories other than American.

Periodicals loom large in all special library work and any publication which will assist in identifying and locating periodicals has considerable value. For this reason, the ninth edition of Ulrich[40] will have been a welcome acquisition to many librarians, since it remains one of the most valuable guides to the periodical literature of all subjects. Similarly, the Unesco *Directory of current Latin American periodicals*[41], the Library of Congress guide[42] to Russian serials for the period 1939–57, and a new edition of a directory[43] of periodicals published by international organizations all made welcome appearances. Union lists of periodicals are always of value in speeding interlibrary loans, and two such lists, covering London[44] and the north-west of England[45] respectively, were published. An important British standard[46] relating to periodicals of reference value appeared, laying emphasis on the importance of editorial layout, form and presentation and making recommendations designed to make periodicals easier for readers and librarians to use. Burton wrote a series of articles[47, 48, 49] revealing journals in the fields of chemical, mechanical, and metallurgical engineering most frequently cited in American engineering journals. A short article by Tober[50] gave some revealing figures on the costs of alternative methods of keeping learned journals in print.

Classification continues to be a thorny problem for many special libraries. A new edition of Dewey[51] is always an occasion for a fresh look at the possibilities of this scheme, but the continued lack of flexibility revealed in the sixteenth edition makes it unlikely that many, if any, special libraries will find it appropriate to their needs. Coates[52] and Vickery[53] disclosed in their reviews the weaknesses of the scheme from the special librarian's point of view. Vickery's book[54] was undoubtedly the major contribution of the year to literature of the subject; an enlarged second edition following less than a year after the first edition indicated the extent to which a need had been met by the work. It will be found particularly valuable for its exposition of the principles of faceted classification and the examples given in the appendices of actual schemes with their notation. The difficulties of constructing a general and universally valid classification scheme were clearly indicated in an article by Kyle[55]; those special librarians casting about for a scheme devised for their particular subject interest were served by a fourth edition of the Special Library Association's *Loan collection of classification schemes*[56]. A second edition appeared of the now fairly well known ASM–SLA scheme for metallurgy[57]. In the related field of indexing, new editions were published of two of the most useful publications on this subject, by Collison[58] and Wheeler[59]. Collison's book was considerably enlarged by the inclusion of new material on such topics as the indexing of films, business indexing, co-ordinate indexing, and the Society of Indexers. An article by Richter[60] included the text of the final report of the American Standards Association Z–39 Subcommittee on Indexing. The Private Libraries Association issued *Simplified cataloguing rules*[61] based on existing codes of practice, and Parker[62] contributed a helpful article for those facing the problems of cataloguing Russian publications.

The phrase 'information retrieval' was used perhaps more frequently than any other in the literature of this period. The phrase certainly has a more impressive air than, say, 'reference techniques'; it is nevertheless important to remember that any junior assistant who can produce a wanted card from a catalogue or supply an answer to an inquiry by intelligent use of a reference work is retrieving information which has been stored in one form or another. The latest report from the National Science Foundation[63] gave a broad survey of the extent and variety of research being carried out, mainly in the United States, in this field. Mechanized information retrieval receives particular attention in the United States, and a large volume by Perry and Kent[64] gave the latest thinking of the very active team of research workers at Western Reserve University. Other summaries of present research in the field were included in books by Boaz[65] and Taube and Wooster[66]. The Aslib research project at Cranfield, in which the comparative efficiency of four different systems of information retrieval is being investigated, was described by Cleverdon[67], who is directing the project. The potentialities of punched cards for storing and retrieving information are of growing interest to special librarians; the publication of a second edition of the most comprehensive book on the subject by Casey and others[68] was therefore extremely welcome and provided an exhaustive treatment of the subject. Attention should be drawn to a useful article by Jolley[69] explaining the method of operation and the advantages of the type of punched card variously known as 'peek-a-boo', 'aspect', and 'feature'.

All special librarians must by now have given some thought to the relevance of photocopying and microreproduction to their activities. Technical developments in the field take place continuously and some guidance in choice of methods and machines has to be sought. Outstandingly useful, therefore, was the book by Verry[70] surveying all the methods of document reproduction, explaining their method of operation, indicating the types of work for which they are appropriate and giving comparative costs. For the latest developments, the surveys made by Davison[71] and Ballou[72] provided convenient summaries of the past year's progress. Further recent thinking on the subject could be gleaned from reports of a meeting of the ALA Resources and Technical Services Division[73] and of the Seventh Annual Meeting of the National Microfilm Association[74]. The latter body also published a most comprehensive *Guide to microreproduction equipment*[75], the value of which is somewhat diminished for British librarians by the overwhelming emphasis on American equipment. Diaz[76] produced a selective bibliography from the literature of the period 1944–58 relating to microcards, and the Microcard Foundation issued the first catalogue[77] of publications available in this form. Some librarians may be interested to read of pioneering efforts in the micro-field in Luther's history[78] of the development of microfilm between 1839 and 1900.

The spate of books on the techniques of report writing and technical writing in general was somewhat less overwhelming than usual. The most acceptable volume was by Godfrey and Parr[79], which contained a great deal of sound advice, useful information, and practical suggestions. An American work by Blickle and Houp[80] was lavishly produced, but some points were perhaps laboured to an unnecessary extent. The Presentation of Technical Information Group published the papers of a symposium[81] on the training of technical writers. Aslib held a one-day conference on the presentation and interpretation of technical information, the papers presented being duly published in *Aslib proceedings*[82].

No library can afford to neglect the foreign literature relevant to its fields of interest, and the growing volume of literature on all aspects of translation activity is testimony to the significance of the topic. A collection of seven papers[83] by members of the Communications Research Centre of University College London treated the subject of translation from widely varying aspects, as did an American compilation[84] edited by Brower. A more practical survey of the 'translating industry' was given in a paper[85] by Matthews and in a book[86] by Lane which, though related to the existing situation in Germany, provides a basis for comparison with facilities in other countries. The importance of

Russian scientific literature was reflected in the publication of three works, by Magner[87], Turkevich[88], and Condoyannis[89] respectively, designed to give scientists varying degrees of familiarity with the Russian language. These three books were reviewed and compared in the December 1959 issue of the *Journal of documentation.* Two useful guides, both American, to sources and services in technical translation were produced by the Special Libraries Association[90] and the US National Library of Medicine[91] respectively. Technical translating dictionaries may be located, together with general translating dictionaries, in Zaunmuller's handbook[92], and Wuster produced the second volume of his bibliography of monolingual scientific and technical glossaries[93]. A survey of developments in mechanical translation was given in a lengthy article[94] by Panov and others.

There remain a number of items which deserve mention but fail to fit into the groups of topics already surveyed. The treatment of manufacturers' trade literature in special libraries causes headaches to many, and two articles, by Linstead[95] and Collison[96], gave admirably practical advice on methods of arranging this type of material. Library administration was treated from every conceivable angle in the second edition of Ranganathan's book[97] on this subject. Hodgson[98] gave some clues as to the desirable size and services of a research library in relation to its parent organization. Strieby[99] shed some light on the rather nebulous topic of public relations activity in special libraries. Finally, a new library periodical of note, *Library research in progress*[100], made its first appearance, as did an informative bulletin from the Office of Science Information Services in Washington, *Science information news*[101] (which has since changed its title to *Scientific information notes*).

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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC (ENG.), FIL, 140 Wightman Road, London, N.8. Tel. Stamford Hill 8564.

WILFRED E. GOODAY, ARSM, DIC, MIMM, Member Translators' Guild. Technical translation from French and Roumanian. Institute of Linguists rates. 161 Rivermead Court, London, S.W.6. Renown 1912.

Appointments vacant

BRITISH STANDARDS INSTITUTION requires a technical officer to work first on a (non-UDC) feature-card index to the contents of all British Standards, and later to assist with the preparation of the English edition of the UDC and associated duties. Desirable qualifications are a broad educational background with a good knowledge of scientific and technical terminology, sound reading knowledge of German and French, and some indexing and editing experience. Commencing salary not less than £850 a year, with prospects. The post is pensionable. Applications, stating age, qualifications, etc., should be submitted to the Establishment Officer, BSI, 2 Park Street, London, W.1.

BRITISH NYLON SPINNERS LIMITED require a woman, aged 25–45, as an INFORMATION ASSISTANT for the Economics Library of the London office in Knightsbridge. Candidates, preferably educated to degree standard, should have had some experience of library work, with genuine interest in economics as applied to the textile industry. Excellent working conditions in modern offices. Apply in writing to Personnel Manager, Pontypool, Mon.

HERTFORDSHIRE COUNTY COUNCIL TECHNICAL INFORMATION SERVICE. Applications are invited for a new post of CATALOGUER/ABSTRACTOR in the headquarters of the Service at Hatfield Technical College. Candidates must be competent cataloguers with experience of the UDC. Scientific knowledge is essential, preferably in chemistry. Salary APT Grade III/IV: £880 to £1,220. Further particulars from the Registrar, Hatfield Technical College, Roe Green, Hatfield, Herts, to whom completed application must be returned as soon as possible.

IMPERIAL CHEMICAL INDUSTRIES LIMITED. Paints Division, has a vacancy for a senior woman LIBRARY ASSISTANT aged 30–35, to take charge of the Library Unit of the Division Library and Information Service at Slough. Applicants must be qualified librarians (FLA preferred) and have had experience in a public reference library or a specialized industrial library. The post is permanent and the conditions include a five-day week, and pension and profit-sharing schemes. Apply to Staff Officer (Women), ICI Ltd, Paints Division, Wexham Road, Slough, Bucks.

LIBRARIAN and Information Officer required by large electrical and mechanical engineering company, to administer the library, and to develop the information service for all departments of the company. Applicants must be chartered librarians, and should have had special library experience. A familiarity with engineering and some knowledge of patent law and practice and of German would be an advantage. Five-day week. Salary according to qualifications and experience. Write to Staff Employment Officer, (Ref. L), C.A.V. Limited, Warple Way, Acton, London, W.3.

MOTOR INDUSTRY RESEARCH ASSOCIATION. Applications are invited for the post of LIBRARIAN to take charge of the technical library under supervision of Chief Information Officer. Candidates must have passed, at least, the complete Registration Examination of the Library Association. Good salary, five-day week, pension scheme. Applications should be addressed to Director, The Motor Industry Research Association, Lindley, Nuneaton, Warwickshire.

THE POLYTECHNIC, London, W.1, has vacancies for two LIBRARY ASSISTANTS. For one of these posts a knowledge of architecture would be useful. Salary according to age, within the scale £300 – £660 p.a. Applications with references and details of professional qualifications to the Librarian, The Polytechnic, London, W.1.

The REED PAPER GROUP is expanding its research activities, and now wishes to appoint an ASSISTANT INFORMATION OFFICER in Group Research. This is a new post in a relatively young information section, and offers the opportunity of applying new techniques and new approaches to this work, the stimulus of being part of a rapidly developing enterprise, plus good working conditions and surroundings. The work will be mainly abstracting, indexing, and retrieving information on papermaking processes and other related fields, and the production of information bulletins, etc. The qualities needed for the post are a good level of education and intelligence and some previous experience in information work. New laboratories, to include the information section, are to be built near Maidstone, Kent, where the headquarters of Group Research are now situated. Applications for this post will be treated in strict confidence and should be addressed to the Group Personnel Officer, The Reed Paper Group, Larkfield, Maidstone, Kent, quoting ref. A10/GR/06.

TECHNICAL LIBRARIAN. A major industrial concern has a vacancy for an experienced man to take charge of a departmental library serving a large staff of graduates and others engaged in research and technical work. This library is well established but is capable of considerable further development, and the appointment offers a challenge to a really able man who seeks a worthwhile and interesting career. Candidates must be themselves graduates in science or engineering and must have experience in a special library. The post will carry a starting salary of up to £1500 depending on qualifications and experience. Send personal history to Box 560, Aslib.

UNIVERSITY OF NOTTINGHAM. THE LIBRARY. Applications are invited for the appointment of SUB-LIBRARIAN (SCIENCE LIBRARY). A new Science Library is being planned and will be completed in 1963. Until the new building is ready the Sub-Librarian will be responsible for general administrative duties within the University Library. Candidates must be graduates preferably in science or with good experience in scientific librarianship. The post offers an exceptional opportunity to build up scientific information services in a university setting. Salary according to qualifications and experience within the scale £1,050 × £50 to £1,400 × £75 to £1,850, plus FSSU and children's allowances. Conditions of appointment and form of application, to be returned by 25th June, from the Registrar.

Wanted

Electronics vol. 32, no. 33, 14th August 1959. EMI Technical Library, Hayes, Middx. Southall 2468 ext. 2110.

Engineering Index, any volumes 1940–1954, for library of College of Technology. Box 660, Aslib.

For Disposal

Science Abstracts B, covering approximately the years 1946–58, mounted on 5 in. by 3 in. catalogue cards. Apply Central Library and Technical Information Department, Mullard Research Laboratories, Cross Oak Lane, Salfords, Redhill, Surrey.

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 July 1960 Number 7

CALCUTTA UNIVERSITY CENTRAL LIBRARY

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

1961

FEBRUARY

FRIDAY 3rd. Scottish Branch Annual General Meeting. See paragraph below.

SEPTEMBER

WEDNESDAY 6th – SATURDAY 16th. FID and Aslib Conferences, concurrently, in London.

Birthday Honours

Members will have been delighted to see the names in the Birthday Honours List of so many people intimately connected with Aslib. Mr F. C. Francis, Director and Principal Librarian, British Museum, was appointed KCB. He was a Vice-President of Aslib 1954–7 and President 1957–9. He has also been a member of the Editorial Advisory Board of the *Journal of Documentation* for the past eleven years, and has served Aslib as a member of the Executive and Finance Committee and the International Relations Committee. Our warmest congratulations go to Mr Francis on this well-deserved honour. Dr H. G. Thornton, FRS, who served on the Aslib Council 1949–58, was appointed KB for his work as Foreign Secretary of the Royal Society.

Dr T. E. Allibone, Director of Research Laboratories, Associated Electrical Industries, Aldermaston, who has been DSIR Visitor to Aslib since 1957, was appointed CBE and Miss A. M. Gilliland, County Librarian of Staffordshire, MBE. We deeply regret having to report that Miss Gilliland died before her award was announced.

Research Department

Half the published proceedings and reports of scientific and technical conferences have no indexes: that is the basic fact revealed by an investigation reported in the June issue of the *Journal of Documentation.*

Reprints of the paper will be sent methodically to the organizers of forthcoming conferences, congresses, and symposia for the next year or so. The effect of this could be usefully supplemented by personal representations by readers who are associated in any way with the organization of meetings of this kind or with the publication of their proceedings. Such readers will probably not need the evidence given in the paper to convince them that lack of indexes makes this type of publication inconvenient to use and increases the risk that information sought in it, although present, may not be found.

This is an example of a small barrier to effective communication which could be eliminated without great difficulty or expense. Delays in publication might be feared but, since the investigation showed that in any event publication usually took more than a year, and sometimes much longer, additional delay, if any, caused by the preparation of indexes would be likely to be small relatively.

The investigation was confined to science and technology (excluding medicine). Similar investigations could of course be undertaken in other fields.

Inter-library borrowing

During May and June well over a hundred members who volunteered to take part in this investigation have been timing and recording all the operations performed by them in connection with each item borrowed during the first two weeks of the period. This has necessarily involved a considerable amount of painstaking work, so it is gratifying to have heard from some of them that the work has been of immediate value by throwing light upon their own procedures.

From the returns, Aslib will tabulate the data item by item ready for analysis. This will be designed to show not only the average cost of borrowing an item from an outside library, but also the cost of individual operations such as finding locations, and to reveal any significant differences in the costs of borrowing different forms of document. The data provided by the co-operating members will provide invaluable raw material also for a number of ancillary investigations. Tabulation and analysis will be proceeding during the summer months in preparation for the issue of a report by, it is hoped, the end of the year.

Time taken to get periodicals bound

An investigation carried out by the Research Department into the time taken by industrial libraries to get sets of periodicals bound was reported in *Aslib Proceedings,* vol. 11, no. 10, 1959, pp. 237–9. At the suggestion of the Research Committee the investigation was later extended to cover the experience of larger special libraries, mainly those of universities, technical colleges, government departments and professional institutions. A report covering the combined results of both parts of the investigation has been prepared under the title *Time taken by special libraries to get material bound,* RES 8/60, and is available to any member, on application to Aslib.

ASLIB INFORMATION

Index to Theses

Volume 8, covering the academic year 1957–8, of the *Index to theses accepted for higher degrees in the universities of Great Britain and Ireland* is now available. This volume contains titles of 2,853 theses arranged under subject headings, with author and subject indexes. An editorial note gives information on the availability of theses for consultation and an outline of the form of entry used. *Index to theses,* volumes 2 to 8 inclusive, are available from Aslib, 3 Belgrave Square, London, S.W.1; price per copy 21*s* to members, 25*s* to non-members.

British Scientific and Technical Books 1953–7

This bibliography, a sequel to *British scientific and technical books: a select list of recommended books published in Great Britain and the Commonwealth in the years 1935 to 1952 is expected about the end of August.* The new volume contains some 3,750 entries, representing the most important and useful books on scientific and technological subjects published in the United Kingdom and the Dominions during the years 1953 to 1957 inclusive. It will be published for Aslib by James Clarke & Co. Ltd at 56*s*. A special price of 49*s* is available to members placing pre-publication orders with Aslib on or before 31st July 1960.

Scottish Branch

A party of sixteen visited the factory of Messrs Barry, Ostlere, and Shepherd in Kirkcaldy on 1st June. They were shown the laboratory, in which is included the library, and the works. The party saw some of the processes of making linoleum, particular interest being shown in the design of linoleum squares.

Electronics Group

Officers of the Group elected for 1960–1 are as follows: Chairman, T. M. Aitchison, English Electric Aviation Ltd, Luton, Beds; Hon. Treasurer, J. E. Bolton-Allen, Automatic Telephone and Electric Co. Ltd, Liverpool; Hon. Secretary, Miss B. Newman, Ericsson Telephones Ltd, Beeston, Nottingham.

A second edition of the *Handlist of basic reference material for librarians and information officers in electrical and electronic engineering* by E. M. Codlin is now available, price 5*s* per copy, from the Hon. Secretary. Cheques and postal orders should be made payable to Aslib Electronics Group.

Film Production Librarians Group

At the annual general meeting on 25th May, the Chairman, Mr John Mountford, reviewed the activities of the Group during the past year and outlined future activities. He mentioned the publication of the *Directory of film production libraries** and progress made by the Cataloguing Committee in the task of creating a code of rules for cataloguing film material. He stated that the Group's plans included production of a thesis on the detailed organization of a film library; technical and social meetings; and a broadening of activities.

**Aslib Proceedings,* vol. 12, p. 47.

Mr Mountford was re-elected Chairman, and Mr H. Wynder, Hon. Treasurer for the coming year. Mrs Anne Hanford, Associated Rediffusion Ltd, Film Library, Television House, Kingsway, London, W.C.2, was elected Hon. Secretary in succession to Miss P. Dowling.

Textile Group

The Annual General Meeting of the Textile Group was held on Friday 29th April at the Federation of British Carpet Manufacturers, Worcester Street, Kidderminster. Afterwards, the Group visited the Carpet Manufacturing Co. Ltd, and spent an interesting and instructive time seeing the processes by which Wilton and Axminster carpets are made.

National Reference Library of Science and Invention

Replying to a question in the House of Lords on Tuesday 31st May, Viscount Hailsham, Lord Privy Seal and Minister for Science, stated that it was proposed to house the National Reference Library of Science and Invention in the new Patent Office building to be erected on the South Bank. It was hoped to start building in the spring of 1963 with a view to completion by the end of 1965. The library would be built up and expanded from the existing Patent Office Library.

It had been decided that it would be in the long-term interest of learning and of the completeness of the national collections of scientific literature for the National Library of Science and Invention to be formed as part of the British Museum Library although housed as a separate unit. The scientific publications at present in the British Museum Library would be incorporated in the new library. Care would be taken to safeguard the interests and convenience of those who used the present Patent Office Library and they would be represented on the advisory committee to be set up when the new Library was brought into operation.

Reports of British Visits to the USSR

As announced in the February issue of *LLU translations bulletin*, DSIR Lending Library Unit is making a collection of reports on visits made by British technical specialists to the USSR. The object of this collection is twofold: to enable the staff of the Unit to answer increasing numbers of technical inquiries on current Russian practice, and to make the reports available on loan to potential visitors and others to whom they may be useful. Members making visits to the USSR are therefore asked to deposit with the LLU, 20 Chester Terrace, Regents Park, London, N.W.1, copies of reports likely to be of interest to specialists. If required, the origin of any such report will be omitted.

Intensive Courses in Scientific Russian

Two intensive courses in scientific Russian will be held at Ealing Technical College and School of Art, commencing in September. Course 1, for beginners, will take place from 9 to 11 a.m. on Mondays and Thursdays. The first term's work will cover mastery of the alphabet, basic vocabulary, and grammar; the second term will lead into scientific reading and translation; and in the third term groups will work in accordance with subject interests. Course 2, for those with some knowledge of Russian, will take place from 2.30 to 4.30 p.m. on Mondays and Thursdays. In this course more difficult constructions will be dealt with and the individual requirements of students specially considered. The fee for either course is £4 10*s*. Application should be made as soon as possible to the Head of the Department of General Studies, Ealing Technical College, St Mary's Road, Ealing, London, W.5.

French Technical Translation

Holborn College of Law, Languages, and Commerce announces a full-time course in French technical translation to take place during the 1960–1 session. The course is intended to include each week, nineteen hours on translation and its techniques, two hours interpreting, and five hours of lectures on background studies, dealing with French geography, history, institutions, and economy. Special attention will be given to correct translation from French of technical and advertising material. It is intended to ask the Institute of Linguists to examine the students and award a diploma in translation. The fee for the course will be £25 for students living in the London area. Applicants should have, in French, a pass at GCE, A level, or Preliminary Associateship of the Institute of Linguists, or equivalent. Those interested should communicate with Mr P. P. Newmark, Head of Department of Modern Languages, Holborn College of Law, Languages, and Commerce, Princeton Street, London, W.C.1.

Fuel Abstracts and Current Titles

The first issue, dated May 1960, has appeared of *Fuel abstracts and current titles,* which replaces *Fuel abstracts* formerly published by DSIR. An editorial note states that all aspects of fuel and power covered in the previous *Fuel abstracts* are included and, as the circulation increases and the publication develops, the aim will be to increase further the coverage of articles in foreign journals, particularly in the less well-known languages, and the coverage of patents.

Fuel abstracts and current titles is published by The Institute of Fuel, 18 Devonshire Street, Portland Place, London, W.1, at an annual subscription of 12 guineas ($36) including index and postage.

AEI Engineering Review

Associated Electrical Industries, Limited, have recently published volume 1 number 1, dated May 1960, of a new journal entitled *AEI engineering review.* This issue is described as the first of an 'interim edition' which will appear every two months until the end of the year. The first issue of *AEI engineering review* in its final format as a monthly journal is expected in January 1961. The review is intended to replace *BTH activities, M-V gazette, Siemens Edison Swan journal* and Henley's *Distribution of electricity,* and the interim edition will be made up largely of material prepared for these papers. *AEI engineering review* is available, free of charge, from Associated Electrical Industries, Limited, 33 Grosvenor Place, London, S.W.1. Telephone: Belgravia 1234.

Bibliography of Aquatic Sciences

The Food and Agriculture Organization of the United Nations (FAO) has announced the publication, delayed by unexpected production problems, of the *Current bibliography for aquatic sciences and fisheries,* parts 1 and 2, in printed form. Commencing with these issues, the bibliography is available only at an annual subscription of £9 from Messrs Taylor and Francis, Red Lion Court, London, E.C.4, or through their agents overseas. Free distribution of the mimeographed version of the bibliography has now ceased.

Chemical Titles

The Chemical Abstracts Service of the American Chemical Society has published the first number, dated 5th April 1960, of *Chemical Titles: current author and keyword indexes from selected chemical journals.* The object is to provide an express service designed to increase current awareness of new chemical research by filling the void between primary publication and the appearance of abstracts. Each issue will cover 2,000–3,000 titles from current issues of some 550 journals, including 110 Russian ones. It is stated that preliminary data indicate that annual subscriptions can be made available at a rate falling between $25 and $65, with discounts for quantity purchase, the precise amount depending upon circulation and certain other factors. Twenty-four issues will be posted annually. Further details and order forms may be obtained from the Business Manager, American Chemical Society, 1155 Sixteenth Street, N.W., Washington 6, DC, USA.

Cataloguing in Source

The final report is now available, under the title *The cataloging-in-source experiment,* of the Library of Congress experiments in cataloguing in source carried out during 1958 and 1959. It can be obtained free of charge from the Card Division, Library of Congress, Washington 25, DC, USA.

Unesco Advisory Committee on Documentation

The report has now been published of the joint meeting of the Bureau of the International Advisory Committee on Bibliography (IACB) and of representatives of the International Advisory Committee for Documentation and Terminology in Pure and Applied Science (IACDT), held in Paris from 9th to 11th March. Among other resolutions the meeting recommended inclusion of the following two additional items in the 1961–2 Unesco programme, provided funds were available: *i.* publication of a list of abbreviations of periodicals on the lines of the *World list*; *ii.* issue of a brochure regarding the setting up of Unesco centres of scientific documentation, provided this did not duplicate the manual on modern documentation practice being prepared by FID. The meeting recommended also the establishment of an international advisory committee on bibliography, documentation, and terminology, which would deal with general problems in these fields.

The full report is contained in UNESCO/CUA/102—NS/162 of 8th April 1960.

International Cataloguing Conference

The International Federation of Library Associations (IFLA) is planning to convene, in 1961, an international conference on cataloguing principles.* In this interest a meeting of the IFLA Working Group on the Co-ordination of Cataloguing Principles was held in London from 19th to 25th July 1959. The report of this meeting has now been published and includes the following resolutions: The aims of the conference should be to reach agreement on basic principles governing the choice and form of entry in the alphabetical catalogue of authors and titles, based on the assumption that the catalogue must serve to locate a publication by its author's name or title and bring together entries for all editions and translations of each work and all works of one author. The conference should direct its attention to those important aspects of cataloguing practice which present marked variations under different cataloguing systems. Questions on which substantial agreement already exists should not appear on the agenda. The conference should be held in Paris, preferably in April or September.

Copies of the report are available on application to the Executive Secretary, International Conference on Cataloguing Principles, c/o National Central Library, Malet Street, London, W.C.1.

Documentation in Microbiology

It is reported that a permanent committee for microbiological and immunological documentation has been established by the International Association of Microbiological Societies, a section of the International Union of Biological Sciences. Inquiries should be addressed to the Permanent Committee for Microbiological and Immunological Documentation, Box no. 4, NGO Room, Unesco, Place de Fontenoy, Paris.

Pacific Science Information Centre

It is reported that the Pacific Science Association has established a Pacific Science Information Center at the Bernice P. Bishop Museum, Honolulu, Hawaii. The object of the new centre is to provide science information services to those concerned with research in the Pacific area. Special fields covered will include human ecology, land fauna, and geography, with relevant cartographic and statistical data.

Revision of Mendelssohn's Bibliography

South African Libraries has announced that a grant of £8,000 has been made by the National Council of Social Research to the South African Public Library, Cape Town, for the revision and supplementing of Sidney Mendelssohn's *South African bibliography,* published in 1910. It is intended to use the first edition as a base, to be photographed on to cards or slips and checked, initially, against holdings of the South African Library. Cards for titles not in the first edition will be photographed and added and the process repeated with the Mendelssohn and Parliamentary Collection, and in the main African libraries in other parts of the country.

**Aslib proceedings,* vol. 11, p. 32.

Dr Jesse H. Shera

Dr Shera, Dean of the School of Library Science, Western Reserve University, has been appointed also Director of the Western Reserve University Center for Documentation and Communication Research in succession to Mr J. W. Perry, who resigned in order to devote more time to writing and research. Mr Perry will continue at the Center as Associate Director for Research.

New National Member of FID

The International Federation for Documentation (FID) has announced the admission of the Centro de Documentación Científica y Técnica de México (CDCTM) as its thirty-first national member. The address of the Centro is Plaza de la Ciudadela 6, Mexico 1, DF, Mexico.

American Library Appointment

Mr J. C. Harrison, DFC, DPA, FLA, Senior Lecturer, School of Librarianship, Manchester College of Science and Technology, has been appointed Associate Professor of Library Science, Graduate School of Library Science, University of Illinois. Mr Harrison has already left for the US to take up his appointment.

NEW MEMBERS

Corporate

Name	*Locality*	*Representative*
Better Technical Documentation Ltd	Croydon	M. G. W. Agostini
De Grave Short & Co. Ltd	Orpington	F. A. Chappell
Southern Instruments Ltd	Camberley	A. B. Carley

Individual

Jenkins, P.	Alton

THE SCOPE OF MEDICAL ELECTRONICS AND A BRIEF SURVEY OF ITS LITERATURE

A. NIGHTINGALE, MA, PHD, FINSTP
St Thomas' Hospital, London

Electronics Group Conference, Ashridge, 6th to 8th May 1960

MEDICAL ELECTRONICS AND BIOLOGICAL ENGINEERING

MEDICAL electronics has its origins in basic physiological research, a field in which there has been a continual searching since the early years of the last century for instruments capable of detecting and measuring the electric currents which accompany the activity of nerve and muscle fibres (Fig. 1). The discovery of the magnetic effects of a current by Oersted in 1819 was followed by the invention of the tangent galvanometer by Schweigger in 1820, and the moving coil galvanometer by Sturgeon in 1836. Both types of instrument were used by physiologists but they were insensitive and slow in response. Bernstein's work, published in 1871, was a classic example of the victory of ingenuity over the limitations of a sluggish measuring instrument. He employed what we should now call a ballistic galvanometer in series with electrodes attached to a frog's muscle and a special switch. This switch applied a momentary electrical stimulus to the muscle, and then closed the circuit to the galvanometer after a predetermined time interval. By varying this time interval and repeating the stimulus, Bernstein laboriously built up a graph of the current against time. His curve was surprisingly similar to those obtained today using electronic recording techniques (Fig. 1*b*). The duration of the action current, as it was called, was a few milliseconds. Bernstein was able to show further that the action current was propagated along the muscle fibres with a velocity of the order of 1 metre per second.

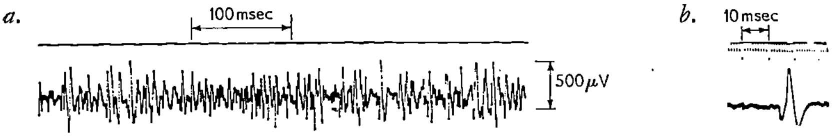
Progress was made later by means of the Lipmann capillary electrometer and the Einthoven string galvanometer, but these were still too slow, insensitive, and fragile. In the 1920s came the first electronic amplifiers, based on Fleming's valve, invented in 1914. This gave the necessary sensitivity, but a fast responding display unit was needed to replace the slow electromagnetic galvanometers. The cathode ray tube gave the answer. The first cathode ray tube recording of an action potential, made by Gasser and Erlanger in the USA, appeared in 1922. Since then the amplifier and cathode ray tube have been universally employed in electrophysiological work.

In parallel with these fundamental researches on the electrical action potentials of individual nerve and muscle fibres, work was going forward on the electrical activity of the intact human body in health and disease and electrocardiography (heart), electroencephalography (brain), and electromyography (muscles) have become established in routine clinical medicine. Examples are given in Fig. 1. In the instrumentation of these methods we have in each case electrodes, amplifier, and display unit (Fig. 2). In electroencephalography (eeg) the

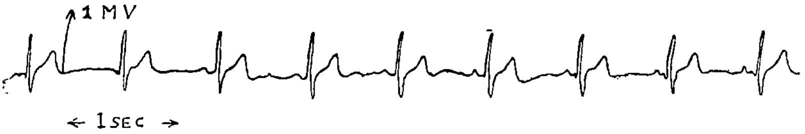
FIG. 1. Examples of electrical activity of the human body

a Electromyogram. Two metal discs 1 cm in diameter are attached to the skin over a contracted muscle. Many individual muscle fibres contribute to this complex waveform.

b Electromyogram. A concentric needle electrode is inserted into the muscle, and the subject is asked to make a very weak contraction. The action potential shown comes from a motor unit, a group of muscle fibres all innervated by the same nerve fibre.



c Electrocardiogram. Two metal pads are attached to the skin, one on each wrist. The subject relaxes to avoid interference from muscles. Different parts of this periodic waveform are associated with the contraction and relaxation of the ventricles and atria of the heart.



d Electroencephalogram. Eight amplifier channels are connected to an array of electrodes on the scalp. Two additional pens provide time marks at the top and bottom. An eleventh pen writes the frequency spectrum of one of the channels in the form of a histogram every ten seconds. The wave analyser contains twenty-four frequency-selective filters centred at 1.5, 2, 2.5 c/s, etc., as indicated in the figure.

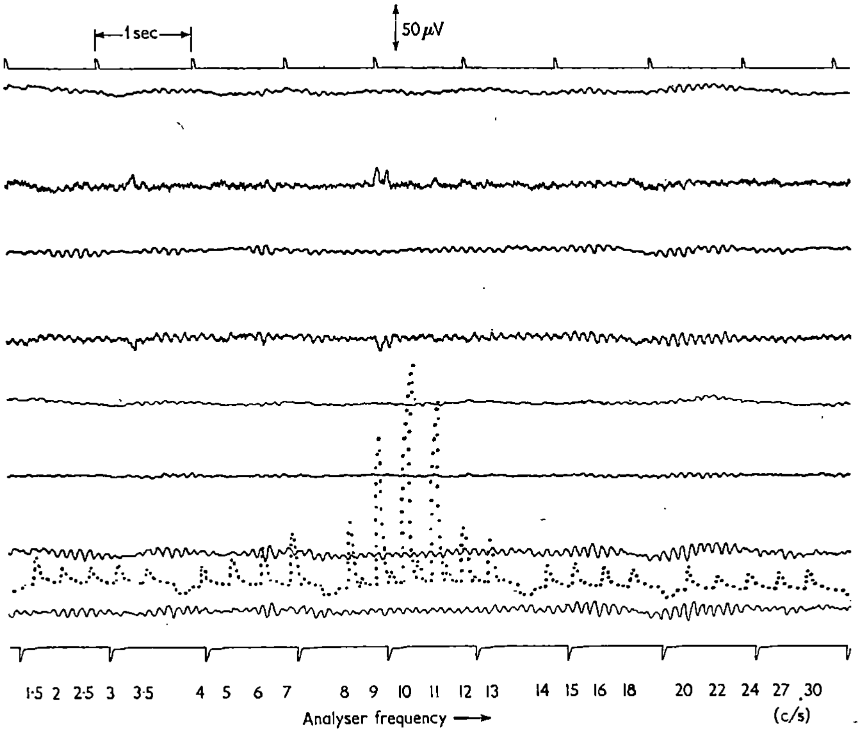


FIG. 2. The essential components of an instrument for observing the electrical activity of the human body.

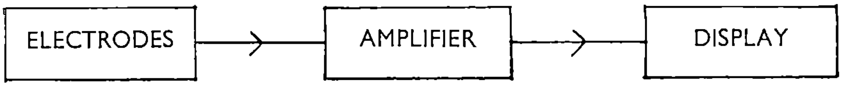
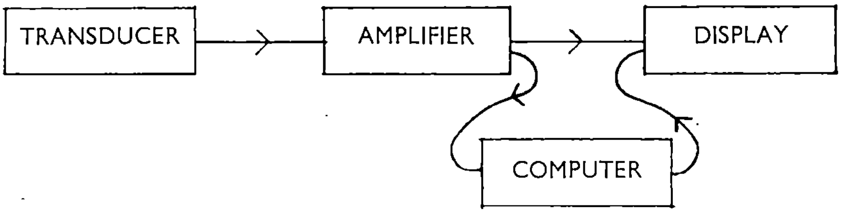


FIG. 3. The components of an instrument for measuring and analysing any required physical parameter.



potentials detected by electrodes attached to the scalp are extremely small, a few microvolts (Fig. 1 *d*), so we have to design an amplifier with a very low noise level approaching the limit of what is theoretically possible. However, the brain waves are relatively slow and an electromagnetic pen recorder (with an upper frequency limit of about 100 c/s) can be used for the display. In clinical electromyography (emg, Figs. 1 *a* and *b*) the potentials are generally rather larger, but they are much more abrupt and of short duration, so that a frequency response up to several thousands of cycles per second is required, and the cathode ray tube is the instrument of choice. Electrocardiography (ecg, Fig. 1 *c*) is the simplest of the three techniques, since the potentials are both relatively large and slow. Now that faithful records can be made of all these types of potential, comparisons between normal and abnormal waveforms can be used to diagnose disease.

Besides the electrical activity of the body important information about its functioning can of course be obtained from measurements of other physical quantities. The two that immediately spring to mind are temperature and blood flow. The humble mercury-in-glass thermometer is still the standard temperature-measuring instrument for clinical work, but when continuous records are required an electrical method is preferred. Thermocouples and thermistors, sometimes with amplifiers, are used, the display being on a recording milliammeter for long records. Blood flow is one of the most difficult parameters to measure successfully, but ingenious instruments like the electromagnetic flowmeter and the nuclear magnetic resonance flowmeter are being developed and are showing great promise. In such methods you will notice that an additional component of our basic bricks has been added—the device which translates the physical variable we want to measure into an electrical signal. This component is called the 'transducer' (Fig. 3). When we are measuring the ecg, eeg or emg we do not need this translation, since the original variable is itself electrical. The design of transducers is a very important part of medical electronics. It is at this point rather than in the amplifier or display system that the worker must be most aware of the contributions which other disciplines can make, notably the physicist, the chemist, and the mechanical engineer. Upon the transducer depends the success of the whole method.

In a hospital the different methods which I have already mentioned, and others such as the provision of an artificial heart-lung machine and the measurement of respiration and of anaesthetic gas mixtures, all meet together most intensively and dramatically in the operating theatre. It is here that the reliability and safety of electronic equipment is put to its most severe test. To give you an example of the difficulty of working under operating theatre conditions I can best describe an experience of my own. A heart-lung machine was in action, an ecg and eeg were being recorded from electrodes on the patient, and diathermy was being employed by the surgeon. In the multiplicity of electrodes, mains leads, and earths it was not surprising to find a large mains interference ripple on the ecg. The eeg could not be used at all. At first I thought this was caused by the diathermy equipment, which is essentially a high-powered radio frequency generator, but after switching this off we still experienced the same trouble. Eventually it was traced to an electric blanket upon which the patient was lying, and which was being supplied by mains alternating current. You need wide experience before you can sort out this type of trouble and make your equipment function efficiently under such conditions.

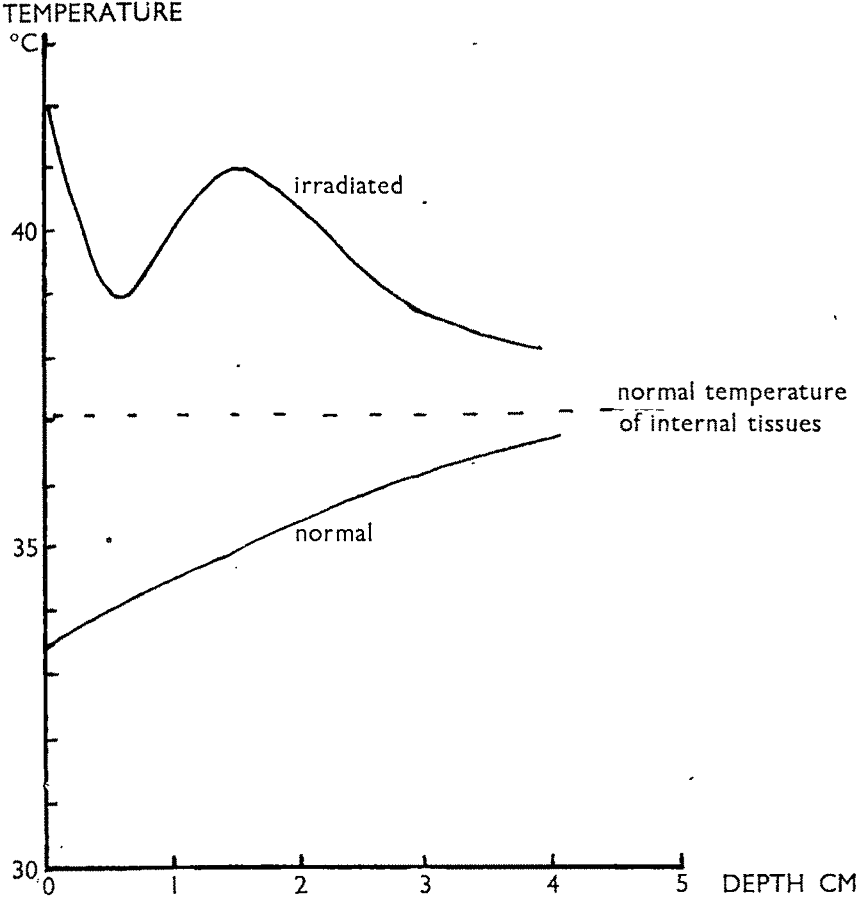
This illustration also serves to emphasize the importance of making equipment small and neat. It is true to say that there has been a tendency for electronic aids in the operating theatre to become bigger as they become better, until it is sometimes difficult to find room for the doctors or even the patient himself. The problem has been eased in recent years by the introduction of transistor techniques. 'Transistorized' and 'miniaturized' equipment is becoming the rule. Furthermore, this trend has opened up new possibilities. A 'pill' containing a radio transmitter, with a transducer for measuring temperature or pressure, and a tiny battery, can be made small enough to be swallowable. It can then signal the conditions which it experiences as it proceeds on its journey through the alimentary canal. Just as important, in the study of normal people under abnormal conditions, is the use of small transmitters which can be carried on the person by mountaineers, by high-altitude flyers, and no doubt in the near future by spacemen, to send back to base information about heart rate, respiration, and temperature.

When one considers the multiplicity of measurements which is often made in the course of a single physiological experiment or clinical investigation, and the miles of inked paper and photographic film used to make recordings, it is not surprising that many workers are seeking methods of analysing their results automatically. Analogue computers have of course been used for some time; strictly speaking, the ordinary cathode ray tube display is an example, since it transforms the data into a graph of the required variable against time (e.g. Figs. 1 *a* and *b*). In addition, the frequency analysis shown in Fig. 1 *d* is really the 'write-out' of a computer which in this case consists of twenty-four frequency-selective filters centred at the frequencies shown on the diagram. Digital computers are also being pressed into service, and methods of transforming continuous waveforms into digital form are concurrently being developed. The use of computers as an aid to diagnosis is being studied, and the possibility of using them to aid hospital record keeping is being discussed.

Other fields of medicine in which electronics has long played a part are radiotherapy and radio-diagnosis. The discovery of X-rays by Röntgen in 1895 was quickly followed by their application in radiography and in the destruction of diseased tissues. During the last forty years physicists have been employed in hospitals on an increasing scale to control and measure the radiations by means of ionization chambers coupled to electroscopes and more recently electrometer valve amplifiers. Radioactive isotopes for tracer investigations and for certain types of therapy have become widely used since the last war, and they too are of course measured by techniques which are essentially electronic, Geiger and scintillation counters combined with scaling units. Perhaps. the most notable advance in radiography in recent years has been the introduction of image intensifiers, which enable the clinician to view a much brighter image than he can by using the conventional fluorescent screen, and at the same time subject the patient to a lower dose of X-rays. The application of television techniques to image intensification is leading to further improvements. However, by common consent and unwritten convention it is usual to separate techniques employing ionizing radiation and isotopes from 'medical electronics'. For the sake of setting a limit to my brief I have excluded them from the survey of the literature given below, along with other important techniques such as electron microscopy, but it should be remembered that the decision is an arbitrary one and that many of the techniques and methods of investigation are complementary.

The applications in medicine of *non*-ionizing radiation, including visible, infra-red, and ultra-violet light and microwave radiation, can by convention be included under the heading of medical electronics. Spectroscopic methods with varying degrees of electronic automation are widely used for analytical procedures in biochemistry and pathology laboratories. The hazards of microwave radiation from high-power transmitters have recently become important, and it may be helpful in understanding this problem to review briefly the effects of non-ionizing radiations on the human body. Starting with the shortest wavelengths, in the range 2,000 to 4,000 Å the so-called ultra-violet, the radiation is absorbed in the skin and produces the familiar sunburn and tanning. The visible (4,000 to 7,500 Å), apart from its effects on the very special visual organs of the eye, can be classed with the near infra-red (up to 16,000 Å) as moderately penetrating (a few millimetres into the tissues). The only important effect is heat production, and this is used in 'radiant heat therapy'. Longer infra-red wavelengths are absorbed very strongly in the surface of the body. Going further out to the so-called microwave region, wavelengths of the order of a few centimetres, we find that the radiation penetrates the body to a depth of a few centimetres. The absorption is mainly by the interaction of the radiation with the water molecules in the tissues. Each molecule is a tiny electric dipole and tends to follow the alternations of electric field, the energy of which is eventually dissipated as heat. The results of this is that watery tissues, such as muscle, absorb more of the radiation than those containing less water, e.g. fat. If there is a layer of subcutaneous fat it may then be possible to obtain a larger rise in temperature at a depth than at the surface. Fig. 4 shows the results of H. F. Cook and his co-workers, who irradiated the body using an applicator pressed against the skin. This technique ensures that the surface temperature is high, mainly because surface moisture cannot evaporate. However, it shows the 'trough' of temperature in the fatty layer and the 'peak' in the underlying muscles. Fig. 5 indicates the type of temperature-depth curve obtained when an open-ended applicator is used, allowing free ventilation of the skin. These techniques have been tried experimentally as 'microwave therapy', but are not widely used. However, the knowledge gained in this work has recently been put to good use in relation to the problem of the hazards from microwave radiation. A rise in temperature like that of Fig. 5 is to be expected if a person stands in a high-intensity beam of radio waves used for radar, etc. The danger is that his internal tissues may rise to a dangerously high temperature before he experiences any sensation, since his sensory endings are on the skin which is not subject to such a great rise in temperature. Furthermore, it should be realized

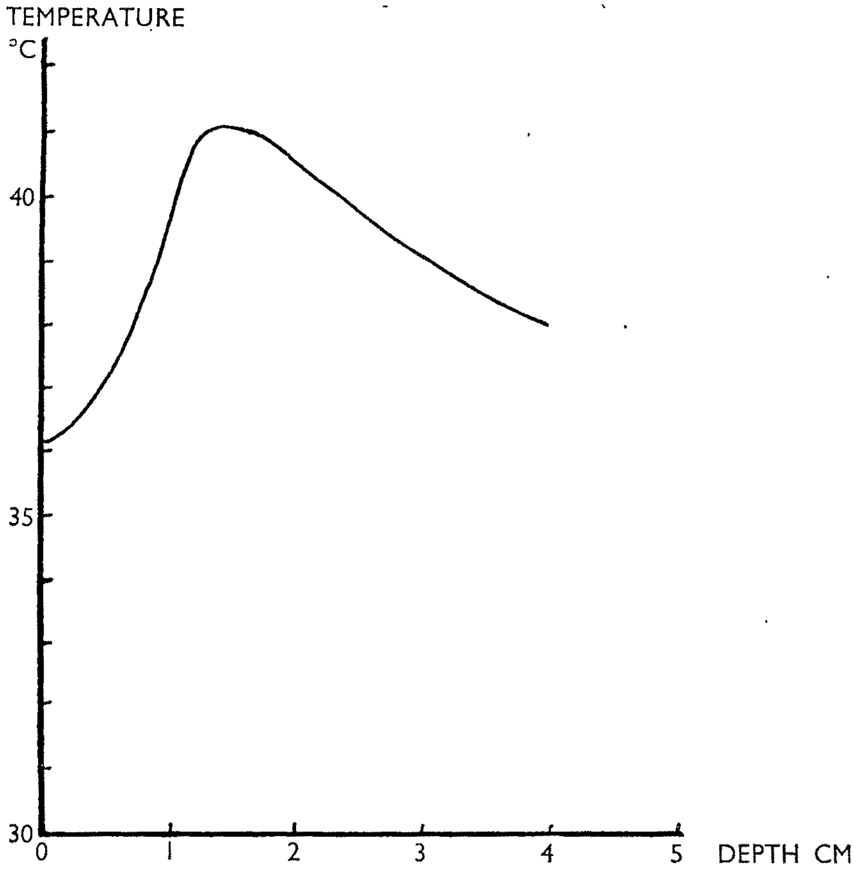
FIG. 4. Illustrating the temperature changes which result from irradiation of the human thigh with microwaves. Wavelength 10 cm, 0.3 watt cm^{-2}, equivalent to four calories cm^{-2} min^{-1} for eight minutes, contact applicator. (Based on the results of Boyle, Cook and Buchanan, *Brit. J. Phys. Med.,* January 1950, p. 1.)



that the temperature rise shown in Fig. 5 would be much greater if it were not for the cooling effect of the blood supply. For these reasons organs with a poor blood supply as well as a high water content are particularly vulnerable, and the most sensitive organ is the lens of the eye. It seems that the average intensity determines the rise in temperature, whether the radiation is pulsed or continuous, and a limit of 0.01 watt per cm^2 has been adopted as the maximum permissible level in any area accessible to a person. Intensive work on the penetration of different wavelengths, on the local effects of standing waves, and on methods of measuring and controlling the field intensity in the vicinity of high-power transmitters is in progress.

The examples I have given show that the clinician, physiologist or biologist pose problems of instrumentation which are at least as stringent as those met in other fields, and the equipment must often be designed to work to the limit of

FIG. 5. Temperature-depth curve to be expected for irradiation with an open applicator, which allows ventilation of the skin. These are the conditions which are likely to apply to a person exposed to a beam of radiation from an aerial system.



what is theoretically possible, under conditions of interference which are far from ideal. In attempting to solve these problems the specialist in medical electronics must keep in mind the other branches of knowledge whose resources he may be able to utilize, physics, chemistry, electrical, and mechanical engineering, and he must realize that for some purposes a mechanical device would serve his purpose more efficiently than an electronic one. Here I enter a plea for the worker in this field to feel himself to be part of a wider movement which we may call 'biological engineering'. On a narrow definition 'medical electronics' is the art and science of applying electronic techniques to the problems of medical research and clinical practice, but in the literature of what is nowadays covered by 'medical electronics' we have a much wider field. A recent issue of the IRE *Transactions on medical electronics* contained papers on 'The automatic recording of digital data in the analysis of primate behaviour', 'The human being as a link in an automatic control system', and 'The ultra-violet flying-spot television microscope', side by side with papers concerned with the more traditional problems of electrocardiography, electroencephalography, and blood flow measurements. Thus as I see it the term medical electronics is already out of date. It should be 'biological electronics', part of the even wider subject of 'biological engineering'.

THE LITERATURE OF MEDICAL ELECTRONICS

Papers which include accounts of electronic instruments are widely scattered in the medical literature. Generally speaking, such papers are mainly concerned with the biological problem, and the description of the instruments is incidental and, because of the nature of the journal, tends to be incomplete. Of the clinical journals *The Lancet* is the one which most frequently publishes an article entirely devoted to electronic instruments, and of the research journals the *Journal of physiology* and the *Journal of applied physiology* should be mentioned. An important addition in recent years is the journal of the Hospital Physicists' Association, *Physics in medicine and biology.* Research workers often divide their reports, publishing the main work in a medical journal and the instrumental section in the *Journal of scientific instruments* or the *Review of scientific instruments.*

Articles on medical electronics quite frequently appear in *Electronic engineering, Electronics,* the *Journal of the British Institution of Radio Engineers* and the *Proceedings of the Electrophysiological Technologists' Association*; occasionally in the *Proceedings of the Institution of Electrical Engineers,* in *British communications and electronics, Wireless world, Electronic technology* and *Philips technical review.*

The first journal to be devoted entirely to the subject has now been running for several years. It is published by the Professional Group on Medical Electronics of the Institute of Radio Engineers (the American body) and is called the IRE *Transactions on medical electronics.* One complete issue was devoted to a 'Symposium on Physiologic and Pathologic Effects of Microwaves' (February 1956). The same group publishes a series of bibliographies on medical electronics, of which the first two issues have appeared so far. This bibliography is compiled by the Medical Electronics Center of the Rockefeller Institute in New York, an organization which is headed by Dr V. K. Zworykin.

A new International Federation for Medical Electronics was formed last year, on the occasion of the Paris Conference. Dr Zworykin is its first President. The

Proceedings of the 1959 Conference are to be published shortly by Iliffe's. Another international conference is to be held in London in July 1960; its Proceedings will be published by the Institution of Electrical Engineers. The British Section of the International Federation, of which I am Secretary, is in the process of forming a new society, embracing medical electronics but rather wider in scope to cover the field of biological engineering which I have described in the first part of this article. This will be called the Biological Engineering Society.

Turning from journals to books, the most notable survey on the subject to appear so far is that of P. E. K. Donaldson (Editor), *Electronic apparatus for biological research* (Butterworths, 1958). Another important series of books is *Medical physics*, an encyclopaedia containing many articles on instrumentation, of which the first two volumes appeared in 1944 and 1950 (Year Book Publishers, Chicago). A third is in preparation. Other useful books are *Electronic measuring instruments*, by E. H. W. Banner (Chapman & Hall, 1958), *Medical electrical equipment*, edited by E. Molloy (Newnes, 1958), *Medical electronics* by G. E. Donovan (Butterworths, 1953), *An Introduction to electronics for physiological workers* by I. C. Whitfield (Macmillan, 1953), *Electrophysiological technique*, by C. J. Dickinson (Electronic Engineering, 1950), and my own fairly elementary textbook *Physics and electronics in physical medicine* (Bell, 1959). There are also two series of books, *Progress in non-destructive testing*, edited by Stanford and Fearon, (Heywood, vol. 1, 1958, vol. 2, 1959), and *Tools of biological research*, edited by H. J. B. Atkins (Blackwell, vol. 1, 1959), which contain a few articles on medical electronics.

So far I have dealt with the most readily available literature from English-speaking countries. There are, of course, many useful papers to be found in the medical literature of other countries, notably the Scandinavian countries, Holland, France, Germany, and Japan. Recently Russian and Chinese journals have begun to appear in translation, and the DSIR Lending Library Unit is making an extremely valuable contribution in this field, as those who attended the recent meeting of Aslib at the Unit will fully appreciate. The most useful of the journals which have so far appeared in complete translation is the Russian *Biophysics*.

It should be emphasized again that the literature on isotopes and radiology has been deliberately omitted. Even so, I am well aware that this survey of the literature of medical electronics is far from complete, and to editors of journals and authors of books which have been inadvertently left out I offer my apologies. However, I believe that my list will serve as an introductory guide, and I hope that members of Aslib will be able to remedy my omissions and so help to increase the essential contribution which an efficient library service can make to the progress of medical research, clinical practice, and biological engineering.

GROUP ACTIVITY IN ASLIB

LESLIE WILSON, MA

Director of Aslib

INTRODUCTION

THE last ten years have seen a remarkable growth in co-operative activities organized by clearly defined sections of the membership of Aslib. Three Aslib Branches—in the Midlands, the North of England, and Scotland—have each arranged series of conferences through which Aslib's purposes have been brought to the notice of large numbers of organizations outside London and the Home Counties. Ten Aslib Groups, each representing an industry or a homogeneous group of industries, have held meetings and short lecture courses and have undertaken a range of activities resulting in practical benefits to the industries concerned. Work of this nature, springing from a genuine desire for professional collaboration, can materially increase the impact which library and information services make upon their parent organizations. It may, therefore, be worth while to take stock of the achievements of the Aslib Groups during the first few years of their existence, and also to make some assessment of their potential role in Aslib's further development.

HISTORICAL

The desire of librarians and information officers with a specialized subject interest to form themselves into specialist groups had already been amply demonstrated before a single Aslib Group was formed. The Medical Section of the Library Association was an obvious example in this country. In the USA a similar desire had been fulfilled by the formation of subject library associations, many of them affiliated to the American Library Association whilst enjoying virtual autonomy. The trend is evident, at the international level, in the formation of the International Association of Agricultural Librarians and Documentalists and the Association Internationale des Bibliothèques Musicales.

The first Aslib Group, the Aeronautical Group, was created because the aeronautical librarians in the Aslib membership felt that certain practical tasks, too specialized for consideration by Aslib as a whole, required to be done. These concerned, among other things, the availability of aeronautical literature to potential users and the need for revision of those sections of the UDC relevant to aeronautical literature. There was also a desire by the Dutch Nationaal Luchtvaartlaboratorium for agreement with groups in other countries on the preparation and format of their punched cards and also a desire for liaison with aeronautical documentation units in Western Europe on the part of the Documentation Committee of the Advisory Group for Aeronautical Research and Development of the North Atlantic Treaty Organization. There were thus, in the field of aeronautics, compelling reasons for the creation of a compact, effective body with a relatively limited subject interest. Other groups soon followed. For some, the principal need was for closer professional contacts with persons handling information in relatively narrow fields. For others, the appeal lay in the scope offered by group organization for direct and informal collaboration in day-to-day work by, for example, the inter-lending of literature.

Since 1951 these factors have led to the establishment of ten groups:

Aeronautical Group
Chemical Group
Economics Group
Electronics Group
Engineering Group (with a section for engineering translators)
Film Production Librarians Group
Food and Agriculture Group
Fuel and Power Group
Furniture Group
Textile Group

Only one, the Food and Agriculture Group, has been dissolved because of a lack of continuing interest among its members. As might be expected, the pattern of work undertaken is varied and includes:

a. Compilation of a union list of journal holdings and, in one case, a union list of books relevant to the industry.
b. Exchange of accession lists among group members.
c. Revision of specified sections of the UDC.
d. Compilation of an index of trade-names of interest to the group.
e. Promotion of information services within the industry.
f. Holding of short courses for new entrants to library work within the industry.
g. Meetings and conferences ranging from lunchtime meetings with one informal talk to full-scale weekend residential conferences.
h. Visits to other libraries within the industry.
i. The issue of group newsletters.
j. Co-operation with foreign national or international organizations on specific matters.

This list undoubtedly represents a useful body of activity. It should now be possible for each group, in the light of past experience, to plan its own development still further over the next five or ten years. Members of Aslib, generally, might also take the opportunity of considering again ways in which group membership can be of advantage to them.

FUTURE ORGANIZATION OF GROUPS

It would appear that there is room for four main types of group in Aslib:

Geographical Groups

Three, in fact, exist in the form of the Midland, Northern, and Scottish Branches. These have greatly assisted Aslib's growth in numerous ways, especially by holding regional conferences and making contact with local organizations. Other branches could be formed if enough members wanted them.

Industry or Subject Groups

Nine of these exist and have been listed above, together with some of their activities.

Functional Groups

Functional groups would be concerned with particular operations or services such as classification, abstracting, or translation. None at present exists in Aslib, though the Engineering Translators Section of the Engineering Group, with a membership of about eighty translators, has done some extremely useful work and is about to develop into a technical translation group. It seems probable that groups of this nature could provide a most fruitful basis of activity.

Organizational Groups

These would bring together members with a common organizational background e.g. members from universities and colleges or public libraries or industrial firms. The needs of persons in many such categories are already met by other organizations, but this is not true of all and it is recognized that, in some cases, association in an Aslib Group would be appropriate.

There are some obvious dangers to be guarded against if groups are set up indiscriminately—especially overlapping of activities and competition for members' support and for funds. For these reasons the Council itself retains authority to approve the formation of a new group, and gives its approval only in response to a request from a substantial body of members and only if satisfied that the proposed group's purposes cannot be achieved in other ways. Once approved, however, a group enjoys considerable freedom of action in planning and conducting its affairs, but continuance of official recognition and support depends upon a periodical consideration by the Council of the group's achievements and plans for future work.

MEMBERSHIP OF GROUPS

Membership of a group is open to members of Aslib only, but any Aslib member, whether registered as a member of a group or not, is free to attend a particular group function of interest to him. There is at present no restriction on the number of groups a member may join.

GROUP ACTIVITIES

A list of activities already undertaken by Aslib groups has been given above. These represent a useful, but by no means uniform, level of achievement. Similar activities could properly be undertaken by groups in future. It is, however, desirable that the groups should look beyond the confines of day-today library co-operation and see whether they can make some contribution to the solution of basic problems connected with the dissemination and use of specialized information.

Because circumstances vary as between subjects or industries, it is not possible —nor even desirable—to lay down patterns of activity for all groups. The following paragraphs contain, however, some suggestions; the underlying assumption is that a group should undertake only those activities for which it is better equipped, by virtue of the specialized resources of its members, than the parent body or some other existing organization.

Co-operative work of immediate benefit

This would cover, among other things, the compilation of union lists, select lists of books, lists of standards, lists of authorities on narrow subjects, schemes for co-operative purchases and co-operative translation. Schemes for the exchange of experience would also be useful, e.g. a one-week exchange of individual members of staff.

Long-term co-operative work

This might include, for example, the development of classification schedules and subject headings, and the compilation of glossaries of special terms. The groups are, in fact, in a far better position than most organizations to notice and comment upon the use and abuse of technical terms.

Professional contacts

As Aslib grows, contacts between individuals with a restricted subject background are bound to become more difficult at, for example, Aslib conferences, meetings, and social functions. There is, therefore, a good case for smaller meetings among members with similar interests for the reading of papers and exchange of experience.

Joint studies with other organizations

While some aspects of information work can be dealt with by information workers alone, others, e.g. nomenclature or abstracting services, involve other interests and cannot be adequately developed by either subject specialists or information staff working in isolation. The Aslib Groups could, in many instances, give a lead by formulating problems and by enlisting the collaboration of appropriate societies, associations, and institutions in their solution.

Periodical review of literary resources

It would be useful if each group could arrange to hold a watching brief for its members and to report to them on, for example, the growth of publication, new periodicals and changes in periodical publication, new books, new editions, new periodicals needed, directories and buyer's guides, report literature, house journals, and the coverage of the subject by abstracts. This might be done quarterly or annually by means of a newsletter or report, to be published either by Aslib or in the appropriate trade press. A by-product might be regular liaison with publishers in a group's special field.

Provision of expert advice and assistance

Whereas Aslib can deal with the needs of special libraries and information services as a whole, it may frequently not be able to cope adequately with the special needs of a number of narrow subject fields. It needs, therefore, to have at its disposal specialized organizations from which it can seek information and advice. In particular, the Aslib Research Department, as it expands, will need specialized help in selecting literature and co-operating organizations, and in assessing the value of literature in connection with particular investigations. The groups can also usefully act as a sounding board for new services or research projects to be undertaken by Aslib, and supply specific information in support of any representations which Aslib might wish to make to other bodies.

ADMINISTRATION AND FINANCE

Most group work is, by its very nature, voluntary and must remain so. However, secretarial and clerical help is available from headquarters in, for example, circulating notices of meetings and giving publicity in *Aslib Proceedings* to group activities. Small annual grants are made towards incidental expenses of both branches and groups from Aslib's central funds. For special tasks application can be made for additional grants.

CONCLUSION

The relatively large number of members of Aslib who take some part in the activities of the existing groups is a good indication of the value attached to these activities. There is, however, room for the imaginative extension of group work. For this, the Council is willing to make some additional funds available, though it will be appreciated that the sum involved cannot be large and that each case would need to be considered on its merits. Nevertheless, the record of achievement of both branches and groups in the past fully justifies the Council's belief that they can contribute still further in the future to the attainment of Aslib's objects.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

Books and Pamphlets

AMERICAN PHILOSOPHICAL SOCIETY
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Japanese journals in science and technology: an annotated checklist. New York, New York Public Library, 1960. xiv, 119 pp. $2.

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The operation of a company standards department. London, the Institution, 1959. 18 pp. bibliog. (PD 3542.) 3*s*.

CANADA. National Research Council. *Technical Information Service*
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A permutation index to the 'Preprints of the International Conference on Scientific Information', by Joan Citron, Lewis Hart, Herbert Ohlman. Revised ed. Santa Monica, System Development Corporation, 1959. [1], iii, 37 pp.

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List of recently-coined terms in electronics for librarians and information officers in electrical and electronic engineering; compiled . . . for Aslib Electronics Group. London, Aslib, 1960. 3*s* 6*d* (members only).

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Directory of scientific institutions in Indonesia. Djakarta, the Council, 1959. 80 pp. illus.

DAVISON, GEORGE H.
Microtext in the form of opaque cards and transparent microfiches: review of progress, 1959. Rotherham, United Steel Companies Ltd, 1959. 82 pp. 8*d*.

FRANK, OTTO
Die Dezimalklassifikation: Anwendung und Weiterentwicklung. Stuttgart, Dorotheen-Verlag, 1960. 88 pp. (Handbuch der Klassifikation, Heft 12.) DM 6.

FREEDMAN, PAUL
The principles of scientific research. 2nd revised ed. Oxford, Pergamon Press, 1960. xvii, 227 pp. tables, diagrs. 25*s*.

HEWITT, A. R., *compiler*
Union list of Commonwealth newspapers in London, Oxford and Cambridge. London, Athlone Press, for Institute of Commonwealth Studies, 1960. ix, 101 pp. 21*s*.

HODGSON, JAMES G., *compiler*
The literature on library standards, with particular reference to their application to military libraries. Special Libraries Association, Military Library Division, 1960. [2], 25 pp.

HOGBEN, LANCELOT, *and* CROSS, K. W.
Design of documents: a study of mechanical aids to field enquiries. London, Macdonald and Evans, 1960. vii, 79 pp. illus., diagrs. 35*s*.

IMPEX reference catalogue of Indian books: the list of all important Indian books (in English) in print . . . New Delhi, Indian Export and Import Co., 1960. [xxii], 468 pp. 25 rupees.

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Indian scientific and technical publications: exhibition 1960: a bibliography compiled by the National Library, Calcutta. New Delhi, the Council, 1960. xii, 195 pp. 25*s*.

The INTERNATIONAL guide to literary and art periodicals, 1960; editor, Mary Carol Bird. London, Villiers Publications, [1960]. 91 pp. 5*s*.

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Bibliographical references: essential elements. 1st ed., December 1958. London, British Standards Institution, 1960. 7 pp. (ISO recommendation R 77.) 4*s* 6*d*.

IVALL, T. E.
Electronic computers: principles and applications. 2nd ed. London, Iliffe, 1960. viii, 263 pp. illus. diagrs. 25*s*.

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Mechanization of thought processes: proceedings of a symposium held at the National Physical Laboratory on 24th, 25th, 26th and 27th November 1958. London, HMSO,

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PARGETER, PHILIP S.
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SCHEELE, MARTIN
Literatur über Lochkartenverfahrenieine vermittels Sichtlochkarten aufgeschlüsselte Bibliographie über Lochkarten und die mit ihrer Anwendung zusammenhangenden Fragen. Schlitz/Hessen, H. Guntrum, 1959. 116 pp. (With enclosure of thirty green and thirty red visually punched cards in a separate carton.) DM 56.

SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

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WILFRED E. GOODAY, ARSM, DIC, MIMM, Member Translators' Guild. Technical translation from French and Roumanian. Institute of Linguists rates. 161 Rivermead Court, London, S.W.6. Renown 1912.

Appointments vacant

BRITISH NYLON SPINNERS LIMITED require a woman, aged 25–45, as an INFORMATION ASSISTANT for the Economics Library of the London office in Knightsbridge. Candidates, preferably educated to degree standard, should have had some experience of library work, with genuine interest in economics as applied to the textile industry. Excellent working conditions in modern offices. Apply in writing to Personnel Manager, Pontypool, Mon.

COLLEGE OF AIR TRAINING, Hamble, Southampton. Applications are invited from suitably qualified and experienced persons for the post of LIBRARIAN at this newly founded college. The successful applicant will have the interesting opportunity of starting a new library to assist the students in both their general studies and their technical studies (aviation and aeronautics). Salary scale approximately £800–£1,000 per annum, according to experience and qualifications. Apply to the Principal.

DSIR require SENIOR SCIENTIFIC OFFICER/S.O. at Lending Library Unit initially at London, N.W.1 (subsequently Yorkshire, 1961), to assist in development of National Lending Library for Science and Technology. Opportunity to study literature of special subject. Qualifications: 1st or 2nd class honours degree in science or technology. Salary (men) S.O. £615–£1,090. S.S.O. (minimum age 26 and at least three years p.g.e.) £1,166–£1,380. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting A.258/OA. Closing date 29th July 1960.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, PHARMACEUTICALS DIVISION has a vacancy in the library at Alderley Park, near Alderley Edge, Cheshire, for a young woman science graduate, primarily for abstracting, indexing, and classification work. Good knowledge of organic chemistry essential and biological, medical, and/or veterinary reading useful. Reading knowledge of foreign languages, especially German, an advantage. Applications with full particulars should be addressed to the Division Staff Manager, Imperial Chemical Industries Limited, Pharmaceuticals Division, Fulshaw Hall, Wilmslow, Cheshire.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, Plastics Division, has a vacancy for an ABSTRACTOR/SEARCHER on the staff of the Techno-Commercial Department at Welwyn Garden City. This appointment is open to men and women and the qualification is a degree in natural science including chemistry as an honours or general subject. A working knowledge of French, German, or Italian would be useful. The work comprises abstracting, indexing, and searching in general and specialized fields of industrial chemistry. Five-day, 39-hour week. Pension and profit-sharing schemes in operation. Apply briefly, quoting no. 2098, to the Staff Manager, Imperial Chemical Industries Limited, Plastics Division, Black Fan Road, Welwyn Garden City, Hertfordshire.

SCIENCE GRADUATE (woman) wanted to assist Information Officer with abstracting, literature searches, and general information work; ability to supervise library would also be useful; knowledge of languages an asset and some typing highly desirable; five-day week, 9–5.30. Salary according to age and experience. Please apply in writing to the Director, British Paper and Board Industry Research Association, Welcomes Road, Kenley, Surrey.

UNITED KINGDOM ATOMIC ENERGY AUTHORITY. A QUALIFIED LIBRARIAN is required at the Radiochemical Centre, Amersham, to take charge of the Centre's scientific and technical library and to undertake the searching and abstracting of literature and the preparation of bibliographies. Applicants should have GCE at 'A' level, HNC, or equivalent. Some supervisory experience in a scientific or technical library and ability to type would be an advantage. Salary £1,045–£1,285 p.a. according to age and experience. Assisted house purchase and superannuation schemes. Apply to the Personnel Officer, the Radiochemical Centre, Amersham, Bucks, quoting no. 11/1960/205.

UNIVERSITY MICROFILMS LTD has vacancy for young lady to microfilm books and manuscripts in libraries. Library experience desirable but not essential. Successful applicant would be given technical training. Apply to Manager, 44 Great Queen Street, London, W.C.2.

WESTINGHOUSE BRAKE & SIGNAL CO. (Rectifier Division) have a vacancy for an ASSISTANT LIBRARIAN (Female) at the headquarters, 84 York Way, King's Cross, London, N.1. University education desirable; knowledge of German an advantage but not essential; typewriting essential. Attractive salary offered. Applications to Reference P.G.F. at above address.

UNIVERSITY CALCUTTA
CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 **August 1960** **Number 8**

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

1961

FEBRUARY

FRIDAY 3rd. Scottish Branch Annual General Meeting. See paragraph below.

MARCH

WEDNESDAY 29th. Midlands Branch Annual General Meeting.

SEPTEMBER

WEDNESDAY 6th – SATURDAY 16th. FID Conference in London.

Council

At the annual elections to the Council the following Honorary Officers were appointed for the year 1960–1:

President, The Earl of Verulam, for a second year.

Vice-President, Sir Wavell Wakefield, MP, for a second term of three years.

Honorary Treasurer, Mr G. Weston, for a second year.

Honorary Secretary, Mr D. T. Richnell, in succession to Mrs Joyce Lancaster-Jones.

Candidates elected to the office of Elected Member of Council were: L. J. Anthony, W. Ashworth, R. G. Griffin, Miss Barbara Kyle, Mrs Joyce Lancaster-Jones, F. B. Roberts, J. R. Sharp, F. R. Taylor.

Dr R. E. Fairbairn has since been elected Chairman of the Council, and Mr D. V. Arnold Deputy Chairman of the Council for the current year. In addition to its three existing co-opted Members—Mr Austen Albu, MP, Mr R. M. Fishenden, and Mr H. T. Pledge—the Council has invited Miss M. Webb, newly appointed Librarian of the Patent Office Library, to serve as a Co-opted Member and Miss Webb has agreed to do so.

Mrs Joyce Lancaster-Jones

Aslib is deeply grateful to Mrs Joyce Lancaster-Jones for her generous services as Honorary Secretary during the past five years. Mrs Lancaster-Jones has been a member of Council since 1949 and has served also on the International Relations, Conferences and Meetings, and Education Committees, and on the Executive and Finance Committee of which she is still a member. Aslib will benefit from Mrs Lancaster-Jones's continued service as an elected member of Council.

New Honorary Member

Honorary Membership of Aslib has been conferred by the Council on Mr E. N. Simons, lately Publicity Manager of Edgar Allen & Company Ltd, Sheffield, in recognition of his close connection with, and many services to, the Association during the past thirty-two years. Mr Simons was responsible for starting the information service of Edgar Allen & Company Ltd and was its representative in Aslib 1928–58. He served on the Council and on the Executive and Finance Committee for several years and was largely responsible for the formation of the Northern Branch, of which he was Chairman from 1950 to 1953 and a member of the Committee for four years previously. Mr Simons has given a number of papers at Aslib conferences and meetings, on various aspects of information services and librarianship, including editorial work and writing of abstracts. Mr Simons is the author of five novels and twenty technical books. He served on the Russian Committee of the Federation of British Industries and the Council of the Russo-British Chamber of Commerce.

Aslib Technical Translation Group

The Council has approved an application for the Engineering Translators' Section of the Aslib Engineering Group to be re-formed as a separate group, to be known as the Aslib Technical Translation Group. Details of an inaugural meeting to be held early in October will be announced next month.

Textile Group

At the Annual General Meeting, held at the Federation of British Carpet Manufacturers, Kidderminster, Mr V. D. Freedland was re-elected Chairman of the Group and Mrs M. I. Lomax, Research Department, Tootal Broadhurst Lee Co. Ltd, 56 Oxford Street, Manchester 1, agreed to continue in office as Hon. Secretary and Treasurer.

Fuel and Power Group

Officers elected for 1960–1 are as follows: Chairman, F. Hickman, Chief Librarian, Ministry of Power; Hon. Treasurer, H. C. Claxton, Librarian, C. C. Wakefield & Co. Ltd, Department for Technical Information; Hon.

Secretary, Miss E. D. Norman, Librarian, Foster Wheeler Ltd, Foster Wheeler House, 3 Ixworth Place, London, S.W.1.

Faceted Classification

Faceted classification: a guide to construction and use of special schemes, a new volume, prepared by B. C. Vickery for the Classification Research Group, is expected to be ready before the end of the month. The book has been designed to meet the need for construction of special classifications for detailed arrangement and cataloguing of documents in restricted but intensely cultivated fields of knowledge, as well as to supply a guide for designers of retrieval systems in which classificatory techniques are necessary. *Faceted classification* will be available from Aslib, price 10*s* to members, 12*s* 6*d* to non-members.

Survey of Information/Library Units

Production of the report of the survey of information/library units (see *Aslib Proceedings*, vol. 12, p. 175) was held up on account of unexpected difficulties at the printing works which were outside the control of Aslib. The *Survey of information/library units in industrial and commercial organizations* is now available from Aslib, price 10*s* to members, 12*s* 6*d* to non-members.

The Chemical Society Library

The Chemical Society is to extend the facilities of its library to institutions, firms, and other corporate bodies in the United Kingdom and the Republic of Ireland. Such subscribers will have the same rights as an individual entitled to use the library. All charges for photocopying, postage, etc., will be dealt with on a credit basis and be settled by means of a periodical statement of account. This arrangement should prove convenient to many organizations because it will be possible for requests for loans to be submitted by the departmental librarian or information officer on behalf of any member of the subscribing organization. Full details and copies of the relevant regulations may be obtained from the General Secretary, The Chemical Society, Burlington House, Piccadilly, London, W.1.

Japanese Scientific Books

The Science Museum has recently been presented, on behalf of the Prime Minister of Japan, with a collection of Japanese scientific and technical books and dictionaries. As a result of this gift, the library now possesses a considerable collection of such books in English or with English summaries, as well as current Japanese scientific and technical periodicals.

The National Film Archive Catalogue

The National Film Archive celebrates its twenty-fifth anniversary this year and has marked the occasion with the production of part 2 of its permanent catalogue. The Archive was established in order to undertake the permanent preservation of selected moving pictures of importance either as works of film art or as historical records. Though originally concerned exclusively with cinematograph films, the Archive has recently extended its collection to the field of television. The collection now covers 7,000 films (excluding newsreels), 6,000 film books, 150,000 stills, and a considerable quantity of information and research documents. A complete loose-leaf provisional catalogue of the collection is maintained at the Archive and from this a permanent card catalogue is slowly being established. It is intended also to publish the permanent catalogue in printed-book form as the different sections are completed. The first part was published in 1951 under the title *Silent news films 1895–1933*, and the volume now available covers silent non-fiction films 1895–1934. The entries are arranged chronologically (by date of first release where this was ascertainable) under country of origin, with subject index and alphabetical title index, 206 pages with additional 12 pages of plates. *National Film Archive catalogue: part II, Silent non-fiction films 1895–1934* is obtainable, price 15*s*, from the Publications Department, The British Film Institute, 81 Dean Street, London, W.1.

Mr F.L. Alloway

The Directors of Bailey Bros. & Swinfen have announced with regret the death of Mr F. L. Alloway, Manager of their Subscription Department. Mr Alloway started his career at Wimbledon Public Library and later ran his own bookshop in Rochester. He will have been best known to librarians, however, during the latter half of his life when he was supplying periodicals to commercial, public, and university libraries on behalf of Baillière, Tindall & Cox, David Nutt, and, lastly, Bailey Bros. & Swinfen.

THE TAPE TYPEWRITER PLAN:
a method for co-operation in documentation

CALVIN N.MOOERS
Proprietor, Zator Company

Aslib Winter meeting, London, 10th May 1960

ABSTRACT

THE 'Tape Typewriter Plan' is a plan for making possible a widespread co-operation in documentation between libraries, while at the same time facilitating the internal clerical and cataloguing operations at individual libraries. The plan is based upon the use of a tape-controlled typewriter and the associated use of the full capabilities of modern information processing machines (electronic computers and their related devices). Any individual library requires only a tape typewriter in order to enter the plan and to become a full co-operator. By the exchange of tapes between libraries, the present enormous duplication of bibliographic work at co-operating libraries can be markedly reduced, because keyboard operations performed at one library can be used to make catalogue cards at another. Conformity to any single classification system or to any specific catalogue card format is definitely not required by the plan, since the information processing machines operating on the tapes produced can make new tapes for other formats and can perform translations from one classification system to another. The information processing machines can also be used for rapid compilation of special indexes, lists, selected bibliographies, union catalogues, lists of holdings geographically, etc., for the documentary resources of all the co-operating libraries. A most important aspect of the plan is that it will not require setting up a unique large-scale universal documentation centre for processing, search, or storage. The plan does not require conformity in the choice of tape-typewriter equipment to be employed. The plan does not require library ownership of computing equipment, nor does it depend upon any specific choice of computing equipment. The plan is shown to be self-motivating, with participation at each library following from the library's own assessment of its self-interest.

INTRODUCTION

The Tape Typewriter Plan is a new programme which I believe will provide a substantial advance in the technology of documentation. The immediate improvements will be of two kinds. First, the plan provides a simple new means for co-operation between libraries to improve cataloguing and to eliminate duplication of effort in cataloguing. Second, the plan provides a means for greater clerical efficiency in the cataloguing operations now being done at each library.

The subsequent improvements in documentation due to the plan will be even more important. The plan will lead to interlibrary co-operation on a large scale, providing many of the advantages—and none of the disadvantages—of a 'universal documentation centre'.

Although the Tape Typewriter Plan is a co-operative plan, involving the exchange of material between libraries, the plan requires no compulsion and virtually no standardization of theory or method. The plan is designed to provide maximum benefits to the participants with a minimum of contributory work. Participation in the plan will follow from a library's determination of its own self-interest.

The plan has other features. It is designed to make full use of modern electronic data-processing equipment (electronic computers). At the same time the plan definitely does not require any participating library to have computing equipment of its own. For full participation in the plan, all that is required is for each library to possess a tape typewriter. This is a unit of only moderate cost.*

One of the main purposes of the plan is to permit the work done in cataloguing of documents at one library to be used for making catalogue cards at other libraries. An unusual feature of the plan is that it does not require a narrow standardization of cataloguing format (arrangement of printing on a card). Each library can use its own format. Neither does the plan require a standardization upon any single universal classification system or descriptor categorization system of any kind. Libraries may use whatever classification system or subject heading system is most suited to their own operations.

While the Tape Typewriter Plan is very simple in basic concept, study will show that it has many subtleties and that it will have many far-reaching effects. I will now describe the plan piece by piece. Following this description I will consider some of the consequences of the plan.

THE TAPE TYPEWRITER

The basic device, around which the whole plan revolves, is a machine which I shall call the 'tape typewriter'. There are a number of commercially available tape typewriters. These are manufactured at various prices. Each make has various features of speed, convenience, and versatility of operation. These machines should all be examined in the light of a specific library's problem before a particular machine is chosen for use. Commercial tape typewriter devices are sold under the following names:

Name	*Manufacturer*	*British Distributor*
Flexowriter	Friden, Inc.	Bulmers Business Machines
Perfomat		Creed, Croydon
Synchro-Tape	Sperry-Rand, Inc.	
Teletype	Teletype Corporation	
Olivetti Teletypewriter	Olivetti (distributed in US by Telautograph Corp., Los Angeles)	British Olivetti (Audit 930)
Telex	Siemens	
Typewriter controllers and paper tape readers and punches	Soroban Engineering Co., Melbourn, Florida	Creed, Croydon

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* From approximately £1,500.

The IBM 'Cardatype' machine, although it produces punched cards instead of tape, should be studied also before a choice of machines is made.

There undoubtedly exist other useable machines, since my list is not intended to be exhaustive. One of the important features of the plan is that its operation does not depend upon universal standardization on any particular commercial make of machine. Each participating library can choose whatever kind of machine is found to be most available and suitable to that library.

For the benefit of those readers who are not familiar with tape typewriter machines, I now wish to explain them. A tape typewriter is basically a typewriter: it possesses a typewriter keyboard, and when one operates this keyboard printed characters are made on a sheet of paper placed in the machine. In fact, most of the present commercial tape typewriters are built around a conventional electrically operated typewriter mechanism.

In addition, the tape typewriter must also have two other features. It must have the ability to produce a perforated paper tape record of everything that is typed. It must also have a paper tape 'reader' which can read perforated tape and operate the typewriter in accordance with the perforations on the tape.

Consider first the production of the perforated paper tape. The machine must be able to make perforations or punches in a strip of paper tape each time one of the typewriter keys is punched. For each of the typewriter characters, a different pattern of punches is produced by the tape perforator. Each pattern is produced by a row of punches placed in a single line crosswise to the paper tape. Some machines use a five-location matrix for placing the punches in line across the tape. In such a machine there are $2^5 = 32$ possible patterns of punches and blanks that can be recorded in any line on the tape. Such a tape can handle thirty-two different characters. As each typewriter character key is actuated, not only does this character print on the sheet of paper in the typewriter, but a corresponding pattern of punches is simultaneously perforated into the paper tape. After each character the tape moves forward, with the result that as a line of text is typed on the sheet of paper, there is also produced a strip of perforated paper tape which records each step in the operation of the typewriter. In a fully capable tape typewriter the letters of the alphabet, numerals, punctuation, 'capitals' 'carriage return and line advance', 'tabulate', and 'backspace' are all recorded by patterns of punches in the tape.

The five-location tape perforating matrix is not the only kind used in current tape typewriters. Others use six-, seven-, and eight-location matrixes, with corresponding differences in the patterns of punches and blanks for recording the characters and greater versatility in the number of characters that can be handled.

The second additional feature that a tape typewriter must have is the capability to 'read' perforated paper tape and to actuate either the typewriter keys or the tape perforator, or both, in accordance with the perforated tape record. Thus, a tape which has been produced as a consequence of typing one page of text, and which is then put back into the tape reader of the same machine (along with a new sheet of paper) will produce a tape-controlled automatic typing of a page of text which is identical with the original typed page. It will also produce at the same time a new tape which is a copy of the first.

In summary, a tape typewriter has these elements: *i.* a keyboard which is manually operated to produce both a printed page and a perforated tape at the same time; *ii.* a printing unit for printing characters on a page under the control of either the keyboard or of the strip of perforated tape passing through the tape reader; *iii.* a tape perforator for perforating paper tape in accordance with the keys pressed on the keyboard or in accordance with the tape in the tape reader; *iv.* a tape reader for reading a perforated tape and controlling the printing units and the tape perforator.

By use of these elements a number of very useful techniques are immediately made possible. Sections of tape can be pasted together to combine sections of text, and the resulting tape can be used to make a unified copy of the combined text. During the typing, a new tape can also be perforated.

One may let the tape typewriter print and perforate under control of the tape in the reader until a blank area in the tape appears and the machine stops. Text can be inserted at the keyboard manually, and the tape can again be started through the reader in order to print automatically the remaining text as it is recorded on the rest of the tape. In this way a new tape can be produced which contains the full corrected text exactly as printed.

By a slight variation upon this method, when the first tape is known to contain errors the tape is allowed to run through the reader (producing typing as it goes) until just before the location of the error. The correction is then manually typed in. The tape in the reader is skipped ahead to the correct position after the error, and automatic typing is resumed. (Depending upon the particular machine used, there are differences in the details of this procedure.) While these operations are going on, a new and corrected tape is automatically produced.

From this description it is seen that a tape typewriter can be used to produce easily an error-free tape by making simple corrections in an error-containing tape. This error-free tape can be used thereafter to produce a perfect typed copy each time it is run through the machine. In other words, a tape containing the recorded text of a catalogue card can be used to produce automatically as many error-free copies of that catalogue card as may be desired. Single error-free copies of any difficult typed matter can also easily be produced in the same way. The implications of these capabilities to library typing procedures are readily apparent.

TAPE TRANSLATION

We must now consider an important complication due to the fact that tape typewriters are not standardized devices. Not only do they differ between manufacturers, but machines made by the same manufacturer bearing the same model or type number will differ in important respects. The manufacturers are not to blame. Many of these variations are ordered by the customer when he buys his machine. Not only will a customer order various special symbols for some of the keys, but he may order a machine with tapes having a five-, six-, seven-, or eight-location punching and reading matrix. In addition, machines from different manufacturers may even use different patterns to represent the same printed character.

For this reason, the perforated paper tapes—as they come directly from a tape typewriter—are not freely interchangeable between machines. Each machine can use only its own particular tape and character pattern code. In order to go from one machine to another, with the second machine having a different tape and code, it is necessary to perform a simple translation and then to perforate a new paper tape which will be used to operate the second machine. Tape-to-tape translators of this kind are relatively simple devices. Laboratory translators have been built and have been used. When a real demand for translators arises, versatile models in commercial production can be expected to become available. Until then, electronic computers can perform this kind of translation.

With a tape-to-tape translator the tapes prepared on any tape typewriter can be converted for use on any other tape typewriter. The only limitation is that the characters called for by the tape must be available on both machines. Through the use of such a tape translator any tape typewriter can 'talk' to any other tape typewriter irrespective of differing tape format or character pattern codes.

Only one tape translator will be needed to perform all the different kinds of translations for all the different tapes exchanged by a group of libraries. For each translation to be made, the tape translator is first adjusted for the tape format and the pattern codes of the *source* typewriter and the *target* typewriter. By use of a translator permitting such adjustments one type of tape translator can serve for all kinds of tape translations.

USE OF ELECTRONIC INFORMATION PROCESSING MACHINES

Tape translation is merely the simplest of the useful kinds of conversion procedures that can be performed on the tapes produced by a tape typewriter. Other more useful and more complicated conversions can be performed by means of electronic information-processing machines (e.g. electronic computers). Such machines have a very high speed of operation, and their versatility is limited in most cases only by the imagination and inventiveness of the user. Time on these machines can be rented, in intervals of a few minutes or hours. Such rental time is available on most computers at any of the commercial institutions which have them. Therefore, it is definitely not necessary for any library to purchase a computing machine in order to take part in the Tape Typewriter Plan.

Let us now consider several examples of the various useful conversions made possible by an information-processing machine. Consider a set of tapes which have been prepared as a consequence of the typing of catalogue cards and which have been read into the memory of the information-processing machines. The machine can rearrange the sequence of entries making up each card, putting (for example) the author's name first. Then, inside its electronic and magnetic memory, it can also perform an alphabetization by author's name for a large collection of cards. When these alphabetization operations are completed, the machine can then perforate a new paper tape which will control a typewriter to type up cards in alphabetical sequence according to authors' names!

Any other rearrangement of content on the card (with or without sequence sorting) can just as easily be performed before making up a new tape.

Any part of the printed matter on the card (e.g. corporate authors, numbers, or abstracts) in the original card text can be omitted by the machine before making up a new tape.

New material (e.g. serial numbers, etc.) can be added by the machine before making up a new tape.

The machine can change the page format before making up a new tape. Thus if the input tape was made for controlling the typing on a 5 in. by 3 in. card, the machine can compose new line lengths, set indentations and page margins for typing up an error-free standard 8½ in. by 11 in. page. It can compose a single- or double-column format. Running heads and page numbers can be added. The output tape which is made will then control a tape typewriter which will type in this new format. Any kind of indentation, spacing, or other possibilities can be created automatically at high speed by the electronic information-processing machine.

By various combinations of suppression of some parts of the text, and by format rearrangement, all sorts of new lists and compilations can be created from tapes originally punched for entirely different formats.

An information-processing machine can just as easily take two tapes and merge their text contents into a single alphabetical or numerical sequence. It can thus interfile items.

Conversely, the machine can select certain items from a list, ignoring the rest, and make an output tape from only the selected items. Any criteria which can be numerically stated, or which involve any occurrence or combination of words, numbers, or classification symbols, can be used as the basis of selection. Therefore any kind of information-retrieval selection can be performed by the machine. The results can be perforated into a new paper tape for later printing.

In some cases the output from a conversion operation by an information-processing machine will be so voluminous that more rapid methods of printing would be preferred instead of the relatively slow (ten characters per second) tape typewriter. In this case one of the electronic high-speed printers will be employed. Some of these printers can print full lines of text (120 characters) at a rate of ten lines per second, i.e. they can print a full single-spaced typewriter page in less than six seconds! This is a printing speed of 600 pages an hour, which means that quite extensive lists and compilations can be printed in less than an hour of high-speed printer time.

USE OF AN INFORMATION PROCESSOR AS A TRANSLATOR

Because of its great versatility, an information processor can certainly convert from one typewriter tape-code to another. It does this by means of a 'table of conversion' which is stored in its electronic memory. For each code pattern on the input tape it looks up the pattern in its table, finds the corresponding output code, and then perforates this second code on the output tape.

The use of conversion tables has many extensions, and these provide a challenging field of exploration. The input to the conversion table may be a number, a symbol, a word, or a group of words. The outputs can be just as varied. A few examples can be given. A table can be set up which takes words as inputs, and which produces a Uniterm number as the output. The inputs can be subject headings, and the outputs can be the corresponding numerical classification code symbols. The inputs may be words and phrases, and the outputs retrieval descriptors. The inputs may be code symbols in one classification system, and the output can be the one or more most closely approximating classification symbols or sets of descriptors in quite a different system.

It is my contention that whenever any two sets of 'subject content indicators' (e.g. decimal classification numbers, subject headings, descriptors, etc.) are sufficiently well defined, it should be possible to set up a conversion table to go from the one set of indicators to the other. Of course, such a conversion, like any kind of language translation, will usually not be completely exact. Part of this inexactness is a result of the imperfect state of our knowledge of these systems and interrelationships. Another part results mainly from the inherent incompatibilities between the classification systems. In general, any given classification system does not make the same distinctions precisely as they are made in some other classification system. For this reason, a single input symbol in one system may be represented by several output symbols in the second system. Other peculiarities may also appear, but a full discussion of these problems is inappropriate here.

The important thing to note here is that both the card or page format and the subject content indicators can be translated from one system to another. Because of this conversion capability, the Tape Typewriter Plan frees us from the need for prior agreement upon any universal subject-indicating scheme or classification system. In this respect the plan differs most significantly from all previous plans for widespread documentary co-operation, since these plans have all specifically required a prior universal agreement. In the history of documentation, such agreement has never occurred.

UNION CATALOGUES, BOOK CATALOGUES, AND SELECTIVE BIBLIOGRAPHIES

Modern librarians would be far more interested in bibliographic tools such as book-format catalogues, union catalogues, and easily prepared selective bibliographies if these tools were not so difficult and expensive to prepare and to maintain. For example, it is impracticable to maintain a book-format catalogue of the holdings of a library primarily because of the impracticability of making additions or frequent new editions. On the other hand, card catalogues, though clumsier to use, permit easy addition by simple insertion of cards. Union catalogues with distribution of cards run into their own difficulties because of the great clerical problems of filing and catalogue maintainance. Thus such catalogues are a luxury. Printed selective bibliographies of several hundred or thousand titles, furnished to a customer at request, are another luxury that libraries have been unable to consider.

The Tape Typewriter Plan, because it is assisted by modern information-processing equipment, places all of these goals within the range of achievement. I speak cautiously here, and only say 'within the range of achievement', because some present important library problems are so vast that they can still overwhelm the largest of our electronic equipments. However, technological progress in equipment is so very rapid that even this limitation will not prevail for long. For another thing, many useful and significant library problems are not so vast, and so they can be handled now by present equipment.

USE OF TAPE MEMORIES AND HIGH-SPEED PRINTERS

Now I wish to discuss large-scale magnetic tape memories and high-speed printers. These devices are adjuncts to electronic information-processing machines. In a library plan the tape memories will have a storage function similar to that of card catalogues: they will store bibliographic information in such a way that the information can be added, extracted, or rearranged at any time. Some of these memories, even at present, have relatively large capacities (e.g. enough capacity to store the contents of 100 drawers of catalogue cards in one memory unit). Memories of this kind, at various locations, linked to the manipulating and translating capabilities of electronic information-processors, and also linked via paper tapes to a multitude of tape typewriters in co-operating libraries will present some truly intriguing possibilities for machine bibliographic communication.

These possibilities are even greater when the use of electronically actuated high-speed printers is taken into account. As mentioned previously, these devices can print a full page of text, typewriter size, single spaced, in less than six seconds per page. In one hour, 600 pages can be printed. This printed copy can be used directly as a single copy, or the printers can produce several carbon copies at the same time. The original copy can also be used for photo-offset reproduction for the printing of hundreds or thousands of copies. The cost of using high-speed printers is difficult to compute, but we can expect it to be within the range of a fraction of a dollar per page.

Using the large tape memories and high-speed printers available, it will be possible to furnish libraries with printed book-format catalogues of their holdings, or parts of their holdings, from the basic cataloguing information stored on magnetic tape. Therefore, catalogues in book format will begin to compete with card catalogues, particularly when machine printing costs drop in comparison to costs of conventional card catalogue maintainance. If and when this occurs, book-format catalogues will become the day-to-day working tool.

At the site of the electronic information-processing machine the magnetic tape reels for the library will spend most of their time in storage. In fact, once the electronic machine has prepared a set of catalogues, it will thereafter be called upon to do library work only during short intervals on some periodic schedule. Thus any library will be obliged to support only a small fraction of the total charge for such machines. At other times the machines will be performing other jobs for other paying customers.

By making use of the interfiling capabilities of the tape memories the catalogues on tape of several libraries can be merged to give a combined or union reference tool. Again, the result can be printed out in book format, and copies can be furnished to the participating libraries.

The selective capabilities of information-processing machines will permit a great many kinds of selection and arrangement of items from the master tapes to form selective bibliographies. With easy selection and printing of relatively long lists of citations (e.g. hundreds or thousands of items), selective bibliographies can be expected to become a much more useful and important tool than they are now. In fact, it is possible that they will take their place as a major tool for information retrieval in libraries that make full and modern use of the technique. In addition, a new technique known as 'lattice indexing' now being developed by the author (which is related to techniques also being developed by others) indicates a new degree of retrieval power that can be given to machine-prepared selective lists and bibliographies.

Because of the practical value of knowing the geographical location of storage of documents, lists printed from this aspect can also easily be provided.

THE PLAN IN OPERATION AT A LIBRARY

In the beginning, for each library, the Tape Typewriter Plan must justify itself solely on the basis of the improvements and economies that it can make in the clerical and typing aspects of library operations. In other words, the introduction of a tape typewriter should make it easier and cheaper to prepare multiple copies of catalogue cards and to prepare error-free copies of lists and to prepare other kinds of error-free copy as needed in library operations. In fact, a tape typewriter should not be brought by a library *unless* it can pay for itself in these operations.

In the next stage of the plan, exchange of paper tapes between one or more other libraries will be undertaken. Tapes for certain lists of citations and references and tapes from certain categories of catalogue cards will be discovered to be useful at the two libraries. A trade can be arranged. A continuing *quid pro quo* exchange, with each library contributing something of value to the other, is easily set up. As such exchanges develop their usefulness, and other libraries wish to join and participate, the formation of tape exchange pools or joint collections will quite naturally begin.

At the individual library, as its collection of paper tapes accumulates (perhaps speeded by participation in a tape exchange pool), there will soon come the desire to do more things with the information collected on tapes. At this stage the library will locate a nearby information-processing machine with extra time available for rental, and will arrange to load its paper tapes into more concentrated magnetic-tape storage. Now the library is ready to use the full gamut of electronic information-processing capabilities: sorting, arranging, editing, translating, printing, and others. Catalogues and classified bibliographies in book form will be one of the major products to be asked for first from such a machine.

However—and this point is very important—one can only process information after somebody somewhere has prepared it on a tape typewriter. If catalogue cards are ever made up on an ordinary typewriter, this labour at the keyboard has been wasted as far as machine processing, or interlibrary co-operation via machine, is concerned!

Therefore the day is soon coming when it will be a 'criminal waste' to put useful bibliographic information through a keyboard without at the same time producing some satisfactory kind of a machine-readable record such as a perforated paper tape, perforated card, or other medium.

THE PLAN IN OPERATION FOR A GROUP OF CO-OPERATING LIBRARIES

A group of libraries, co-operatively participating in the Tape Typewriter Plan, can use their force of numbers to gain a number of considerable advantages.

By acting as a group they can do better bargaining for electronic machine processing. They can also make better use of the machines. It is well known in the computing machine profession that the biggest (and costliest) machines are always the cheapest machines to use in terms of the number of machine operations performed per dollar spent. A group of libraries acting in concert can produce a continuing volume of work which will justify time on a large machine; they can also share the cost of providing computing machine programmes for the various documentary tasks to be done. Furthermore, only by the formation of a co-operating group of a number of libraries can a union catalogue operation be begun.

A typical group of co-operating libraries in a Tape Typewriter Plan will soon have available, through machine assistance, such a large and valuable pool of documentary material that libraries outside the group will discover very compelling reasons to get a tape typewriter of their own and to join the pool and become participants. This should be encouraged. The rules of the game for full participation in any library pool should be 'You furnish your tapes and we will furnish ours'. However, special machine compilations and printing jobs for any particular library will have to be paid for by the library demanding such machine work.

As was mentioned earlier, it is not necessary for the participating libraries to standardize either on any specific commercial tape typewriter or on any specific catalogue format. If differing classification or subject-heading schemes are used, interconversion tables for these should be developed.

In order that larger libraries can handle their work loads, they will undoubtedly want to employ a number of tape-typewriter units. These same libraries in order to facilitate various tape exchanges, will also want their own tape translator units so they can communicate directly by tape with nearby libraries without having to call on computer assistance or on the use of outside tape translators. Smaller libraries will usually be able to arrange for tape translation (on some weekly payment basis) at the larger libraries. In this way the investment in equipment at the smaller libraries can be held to a minimum.

WHY THIS PLAN IS SO UNUSUAL

The Tape Typewriter Plan is unusual in that it most ingeniously side-steps some of the intractable human and intellectual problems that have previously blocked progress in documentary co-operation. At the same time it makes full use of the powerful capabilities inherent in all the mechanical devices employed.

All prior plans for large-scale documentary projects or for documentary co-operation have required *i.* intellectual standardization, *ii.* format standardization, *iii.* disseminated labour, or *iv.* centralization.

Intellectual standardization has taken the form of a requirement for a common, universally agreed classification system (based on words, symbols, or numbers) which would be used by all the participants. Library history shows that such an agreement has never been possible.

Format standardization is necessary for any plan of catalogue card exchange. However, even such a simple form of standardization as the use of uniform catalogue card layout does not prevail among all libraries.

Catalogue card exchange plans, of which there are many, are an example of 'disseminated labour'. This kind of group activity places a burden of labour—for filing the cards received—upon each local co-operator. This burden is not in proportion to the individual co-operator's selfish interest; instead the filing burden due to the flow of cards is in proportion to the size of the group. Therefore such plans, involving labour disseminated at the convenience of others, all come to grief when the load increases beyond the level of local interest.

Many recent (and earlier) plans and proposals for large-scale bibliographic co-operation have been based upon setting up a unique bibliographic centre. Reference questions, and all other information-retrieval customer requests, would be processed by this one centre before information could be provided to the customer. There have been many well-founded objections heatedly advanced against such plan for unique centralization of bibliographic and documentary service. Except possibly in the Soviet Union, objections of this kind have prevented any widespread move in the direction of a universal information centre.

The Tape Typewriter Plan side-steps these four problems. Co-operation can take place without need to standardize on a classification system. (A detailed treatment of the considerations of this point will have to be given in another paper.) To a significantly useful extent, class symbolism can be converted from one classification system to another. Recording formats are easily changed by machine processing. The plan does not disseminate labour at the convenience of others. Each library does only as much work as it finds necessary in order to process *its own* documents only. Finally, the Tape Typewriter Plan leads to a loose confederation of libraries, each co-operating according to its own self-interest, and using pooled magnetic tape storage at a variety of places—but certainly not at any one 'universal documentation centre'.

The Tape Typewriter Plan is unusual also in the way that it recognizes and takes maximum advantage of the peculiar capabilities of electronic information-processing machines. These machines can be considered to be high-speed, completely accurate, clerical robots. Some of their greatest capabilities are in rearranging data, looking up conversion lists of symbols, converting, storing, and printing. Properly used, these machines can do these things very cheaply. However, they do require a 'machinable input' which the machine can read, i.e. perforated tape (or a set of tabulating cards used as a substitute for tape). The plan provides this kind of machinable input.

Most people look upon a choice of a computer as a 'final decision', and think that all subsequent work and thinking about machines must be based upon this one choice. This view is erroneous, even though computer companies have tended to foster this viewpoint. The correct viewpoint is that computers can act as information-processing machines. They can most capably perform high-speed format and symbol translation between computers.

Therefore if any group of libraries desires to make use of the services of a newer and faster computer, they can use the facilities of the new computer itself to convert from the magnetic tape format of the old computer to the new. By using computing machines we can avoid some of the main problems that have plagued all projects of large-scale co-operation in documentation.

HOW TO GET STARTED IN THE PLAN

In order to get started in the plan it is not necessary to wait for anyone else to make decisions in any other library, nor to wait for further technological developments in mechanisms. You can start now. The machines needed for starting the plan (the tape typewriters) have been commercially available for years. What you must do now is to study the capabilities of these machines in the light of your own library operations. It is likely that you will find that some of your clerical processes in document cataloguing could be done more efficiently by use of tape-typewriter machines. If this is so, you can begin immediately, saving the paper tapes produced as a by-product. Then, as soon as another neighbouring library gets a tape typewriter, you can begin an exchange of tapes in a 'two-library plan'. More libraries will soon follow your lead. As soon as a large enough body of tapes is available, but only then, should an electronic information-processing machine be called upon.

The beauty of the Tape Typewriter Plan is that you can start now at your library, on the basis of your own self-interest. You don't need to wait for any kind of agreement on the part of others. From then on, whatever work you do —and preserve on tape—constitutes a resource for later more elaborate machine-processing and for interlibrary trading and co-operations, all to your benefit.

APPENDIX

USE OF NON-PRINTING CHARACTERS FOR FORMAT INDICATION ON ABSTRACTS TRANSCRIBED ON MACHINE MEDIA

Abstract

Tape typewriters will soon be an important tool in bibliographic work. Computing machine editing and processing of the material transcribed on tapes will then be required. It is proposed here that combinations of non-printing characters be recorded on the tape to indicate to the computer the different items contained in an abstract or other information unit. Then the computer can recognize and deal with any sequence or format of items. This will eliminate the burdensome requirement of getting a universal agreement on some standard information unit format before a co-operative exchange of machine transcription of abstracts or other information can be undertaken.

Background and purpose

The use of tape typewriters (i.e. typewriters controlled by punched paper tape or by punched cards) for the preparation of abstracts will soon become very important in documentation. Not only can such typewriters be used to prepare perfect reproduction copy cheaper than by other means, but the record tapes can be fed into a computing machine for further processing. One kind of such processing is the editing of the material into another format, e.g. editing into form for book publication when the original transcription was for catalogue cards. Another kind of processing is automatic indexing of the subject matter of the abstract.

The most important consequence of processing for format change is that any transcription done by one documentation centre can then be used by other centres after a simple computing machine transformer of the format. Thus co-operative bibliographic control projects can be undertaken without the requirement of having a single fixed format that all participants must adhere to.

However, a very serious problem arises in machine processing of abstracts and other documentary information. The problem is that it is difficult to instruct a machine how to distinguish between the title, the author or authors' names, the abstract, and so on. For this reason it is desirable to have some sort of special 'punctuation' to separate and to distinguish between these items. Such special punctuation should be easily interpreted by the computing machine. At the same time such punctuation should not interfere with the ordinary print-out from the tape typewriter.

Proposal

It is my proposal that a 'non-printing character' be placed in the typewriter keyboard and in the tape code. This non-printing character will be recognized only by the computing machine. When this character is struck on the keyboard no printing occurs, but the tape is punched with the tape code for the non-printing character (NPC). Conversely, when the NPC code is read from the tape the typewriter does not print or space.

A single NPC will be adequate to handle all problems that will arise. This is because single and multiple uses of the one character can provide the required number of different meanings. Where the NPC is indicated by ▽, we can form: ▽, ▽▽, ▽▽▽, ▽▽▽▽, etc. Each of these is given a different meaning. By using a single 'space' interpolated among the ▽s, an even larger number of symbols can be formed, such as: ▽ ▽, ▽▽ ▽, ▽ ▽▽, ▽ ▽ ▽, etc. However, I believe it is preferable to avoid these latter combinations and not to assign a confusingly large number of NPC codes because there is a better way of handling these problems. I propose that for each transcription programme, at each transcription centre, a fixed sequence of descriptive items such as: document number, document title, authors' names, dates, etc., and abstract be set forth. This sequence will be called the 'sequential format' of entries for each abstract. It is not necessary for each transcription centre to use the same sequential format of entries. It is only necessary that the sequential format be determinate for any given piece of tape.

My suggestion for the assignment of interpretations to the NPC combinations is as follows:

▽▽▽▽	Marker separating complete abstract or information entries.
▽▽▽	Non-printing 'parenthesis' to enclose special comments. See below for further discussion.
▽▽	Marker to separate title from author, author from date, and in general to separate the various kinds of descriptive items within an abstract entry.
▽	Marker to separate multiple authors, multiple report numbers, and in general to keep content from running together within any one descriptive item.

To use this method of format indication a fixed sequence of descriptive items must be determined. For example, a typical sequential format for one run of tape might be:

i. document number
ii. full title
iii. authors
iv. source agency or company
v. date
vi. number of pages
vii. abstract
viii. classification.

Transcription on this one tape must then follow this sequential format. Where any item of the format is omitted, there must be a '▽▽ ▽▽' with a space between the NPCs to indicate the omission. Where an unusual situation arises, this is taken care of by a comment inserted in this fashion: ▽▽▽ comment ▽▽▽. When this indication of 'comment' is used, the computing machine can easily find the special comment and act appropriately.

The following example is given of the use of such a format and the NPCs.

> ▽▽▽▽ADC 1012; ▽▽ Nuclear Fractionation. ▽▽ J. Jones, ▽B. Smith; ▽▽ Reactors, Inc., and ▽ Univ. Texas, ▽▽ June 1959, ▽▽ ▽▽ No abstract, ▽▽▽ abstract is confidential ▽▽▽ ▽▽ Secret. ▽▽▽▽.

Such things as 'carriage return,' 'indent', etc., have not been indicated, but their use is understood. Note that all the ordinary punctuation is retained.

From the example, the uses of the various symbols are quite evident. The only one needing further comment is ▽▽▽. The material enclosed by this non-printing parenthesis can be of great variety. One important use is to identify special material following the insertion, or to make special comments on deviations from the established sequential format. Symbols not in the regular type founts can be indicated. By using ▽▽▽ in this way all special cases not handled by ▽, ▽▽, or ▽▽▽▽, can be dealt with. Special words assigned conventional meanings can be enclosed in the ▽▽▽ bracket to indicate special functions, and these words can be looked up in a list or table in the computing machine to get the details of what actions are to be taken, since such a list can be of any length, and thus an arbitrarily large number of situations can be dealt with without the need for additional NPC codes or characters.

Conclusion

By means of a special non-printing character the computing-machine processing of punched-tape transcriptions of abstracts and other bibliographic information material can be greatly facilitated. At the beginning of a tape run the computing machine can be instructed in the sequential format of entries within each abstract entry. Thus various sequential formats can be interpreted without trouble by the machine. Consequently there will be no need for a universal standardized sequential format of transcription or print-out. This last consequence—the elimination of a need for prior standardization of format—is the most important result of this proposal.

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DISCUSSION

MR BULL (Meteorological Office) said that his library had installed a 'Flexowriter' for making the subject and author bibliographies and accessions lists to minimize typing and associated checking. Before this machine had been installed each reference, and they amounted to 500 to 600 per month, was typed at least three times and some six or nine times. Processing by 'Flexowriter' had proved to be more accurate. The department had not yet considered exchange arrangements. Two copy-typists had been trained to operate the machine and both had proved reasonably competent in a week and were completely confident with the machine within a month or so. They then found it not much more difficult to operate than a normal electric typewriter.

MR BAKER (Meteorological Office) said experience had shown that feeding short lengths of tape into the machine was a fiddling process and that edge-punched cards were simpler and quicker to handle. These cards are the same size as Hollerith cards and are joined at the ends and folded concertina-wise. One average length bibliographic entry would take up about five cards so joined which could be fed continuously through the machine. A copy of the entry could be made on the face of the first card, thus making it easy to file and handle the separate entries. The tapes had to be folded and filed in envelopes.

Experience showed that the use of cards instead of tape halved running-off time.

MR HEANE (Bulmers) did not agree with Mr Bull concerning value of cards as opposed to tape, but recommended tape as a far more flexible, processible medium.

MR COLLISON (BBC) called attention to an article in *The Indexer* which described the application of a tape typewriter in compiling a register of plant composition.*

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* P. R. P. Claridge. 'Mechanized indexing of information on chemical compounds in plants.' *The indexer,* vol. 2, no. 1, Spring 1960, pp. 4-19.

ASLIB REGISTER OF SPECIALIST TRANSLATORS

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PURPOSE

SINCE its inception in the 1930s the purpose of the Aslib Register of Specialist Translators has remained unchanged. The aim has been to build up a panel of translators who combine linguistic competence in one or more languages with specialized subject knowledge in one or more branches of science or technology. Emphasis has perforce been placed on science or technology because the register operates as a service to Aslib members, the majority of whose interests lie in scientific or technological fields. Nevertheless, a small number of translators have been admitted to the register who possess specialized knowledge of certain non-technical subjects such as economics, law, commerce, industrial management, etc., since translations in these subject fields are occasionally required by Aslib members.

ADMISSION

In the early days of the register admission to it was more or less by invitation. The receipt of a request for a translator from a language not represented on the register resulted in inquiries by Aslib to discover a reliable translator and a letter inviting him to apply for admission to the register. While the register was growing, admission was open to anyone who satisfied the requirements of linguistic competence and specialized subject knowledge. Today the position is very different. Two or three requests are received every week from translators wishing to join the register and only one in three is likely to be accepted. The reason for this is that, with 242 translators now on the register covering thirty-one languages (see Table 1) and every major branch of science and technology, there is a real danger of diminishing to vanishing point the prospects of employment for those well-established members of the register if too many translators with similar qualifications are admitted. The present policy is therefore to admit only those translators who can offer a language, a subject, or a combination of language and subject knowledge that is not already adequately represented on the register.

Applications to join the register are considered on the basis of information supplied by the applicant on a form devised by Aslib. This form elicits information on the following points: name; address; telephone number at home and at the office; age; nationality at birth; education; languages offered, divided into those in which the applicant has had considerable experience of translating from or into English and those of which he has a working knowledge of terms relating to his subject fields; length of residence abroad; subject fields in which academic qualifications are held or long practical experience has been gained; the nature of the practical experience; a list (or selection) of translations already carried out; whether the applicant is prepared to act as an interpreter and, if so, what experience he has had of such work; and finally, perhaps most important, the names of referees who can give an opinion of recent translations carried out by the applicant. Since Aslib is not in a position to judge the quality of translations in a multiplicity of languages and subjects, considerable reliance has to be placed on the opinions given in confidence by the referees.

On the whole this system of vetting applications works very well. A great deal can be learnt at the outset from the manner in which the form has been completed—particularly from omissions and lack of qualifications or practical experience to support claims of knowledge in the stated subject fields. Applicants who claim knowledge of seven or eight languages together with 'most scientific or technical subjects' are of course immediately suspect. The combination of one language with a fairly wide range of subjects or of a number of languages with one particular field (e.g. metallurgy) is more likely to be of practical value, whilst the combination of one or two languages with one broad subject field approaches the ideal. However, it is extremely difficult to draw a firm line where suspicion ends and approval begins. Translators are very definitely individuals and some are indeed competent to tackle a variety of languages and subjects. It is certainly possible to specialize in too limited a field to earn very much in translators' fees, as instanced by one translator on the register who offers only Italian and the subject of telecommunication. This translator has had very few commissions through Aslib's introduction.

FOREIGN-BORN TRANSLATORS

Of the 242 translators on the register, 148 are British born and 94 are foreign nationals by birth. The latter present certain problems, particularly at the stage of vetting the application. The worth of foreign academic qualifications, possibly acquired many years ago, is difficult to estimate in some cases. Often, the applicant has been in this country for a comparatively short time and can name referees only from his native country, and it may be difficult if not impossible to elicit any reply from them, even supposing their address is known. Finally, their command of English may be shaky; this is sometimes apparent from their first letter requesting information about the register, but may not appear in other cases until a translation has been entrusted to them, to the cost of the member who commissions it. It is an axiom of technical translation that a translation is most likely to be fluent and accurate when the translator is translating into his native language. Foreign-born nationals are therefore valuable for translations into their native languages, and of course many of them have lived in this country long enough to write English which in some cases excels that of British-born translators.

COMMENTS FROM EMPLOYERS

An attempt is made to maintain the high standard of the register by requesting members who employ translators to comment on the work carried out for them. The request is, unfortunately, very rarely complied with. In some cases, of course, it would be difficult for the representative (usually the librarian) of the organization requesting the translation to offer any comment on a translation of a highly technical document *into* a foreign language. There are, however, many cases where comment should be possible on such points as technical accuracy, fluent style, speed of delivery, and fee charged, and regular comments would be invaluable. Recommendations of translators could then be made either with increased confidence or with qualified approval according to the comments received.

FEES

A word may be said at this stage on the vexed question of translators' fees. Aslib has at no time made any recommendations with regard to the appropriate fee for translating from or into different languages, and each translator on the register is required to make his own arrangements with the organization commissioning a translation. The only published recommendations on scales of charges which command fairly wide acceptance are those of the Institute of Linguists. These take the form of a table of basic charges for non-technical translation, graduated according to the degree of familiarity of the languages. To these basic charges it is recommended that a surcharge between 50 per cent and 150 per cent may be added for technical or specialized translation, according to the degree of difficulty of the material. In the case of translation from German of a technical article, this recommendation entails a charge of between three and five guineas per thousand words. The average charge made by translators on the Aslib Register for translating technical German lies somewhere between two and three guineas per thousand words. It seems clear that many organizations are simply not prepared to pay more than a certain figure for translation work, particularly in those cases where the value of the article to be translated is in any case uncertain. If a translator is to gain any financial rewards from his work it would seem politic for him not to set too high a value on it, since this is unlikely to be recognized by those who would employ him.

USE

Tables 2 and 3 show a breakdown by language and subject of the requests received for translators in 1958, 1959, and the first five months of 1960. The following facts which emerge from the tables seem to merit underlining:

i. There are twice as many requests for German as for Russian (significant for planners of cover-to-cover translations?).

ii. Japanese is more frequently requested than any language except German and Russian; one-third of the eighty-two translations in the chemical field in 1958 were from Japanese.

iii. Demand for Chinese translations is still negligible.

iv. The subject-spread of requests is very wide, as shown by the high percentage of 'other technical' requests, though the main body of requests falls, as might be expected, in the fields of chemistry, engineering, metallurgy, and medicine.

No further correlation of language and subject requests has been attempted, since the results would seem unlikely to justify the labour. Correlations could, however, be discovered for any Aslib member interested in a particular subject field.

PHYSICAL FORM OF THE REGISTER

The register has been kept until now on 6 in. × 4 in. cards in a number of sequences. Each translator on being admitted to the register is allotted an identification number (or accession number!), and the main sequence of cards is the numerical sequence of translators' cards according to their identification number, i.e. a chronological sequence. These cards contain on the front the translator's name, address, telephone number(s), employer, languages, subject specializations, availability as interpreter, nationality at birth, date of joining the register, and an indication of the fees charged. On the reverse side of the card a record is kept of the occasions on which he has been recommended and any comments received on his work. The other main sequence of cards is of subject cards, arranged numerically by UDC numbers. On these cards is a list of languages with a row of numbers opposite each language indicating the translators qualified to translate in that subject. Other sequences of cards comprise a listing of all translators for each language, an alphabetical subject index to the classified sequence (rarely needed, since the classification is fairly broad), and a list of translators' names showing their identification numbers.

Work has almost been completed on transferring the information at present contained in the classified sequence of cards to Brisch-Vistem punched feature cards. These cards are ideally suited for the purpose of discovering which translators possess a particular combination of language and subject qualifications. The cards are kept in two sequences, the 'features' of one sequence being the languages (three cards for each main language, indicating ability to translate into the language, from it as a first choice, and from it as a secondary choice), the 'features' of the other being subject specializations. The first sequence is kept alphabetically by language, the second numerically by UDC number. An arrangement by UDC was chosen in preference to an alphabetical subject arrangement to permit rapid reference to the next more general heading when no translator is recorded for a specific topic in a required language.

When a request is received for, e.g. a translator from German of an article on organic chemistry, all that will be required will be the superimposition and visual comparison of the cards headed 'From German-1' and '547'; where the punched holes coincide the numbers will indicate the translators with this combination of language and subject qualifications. A further sequence of cards has been punched according to the geographical location of the translators; this can also be superimposed on the language and subject cards to reveal translators in a particular area. This can be useful when the translation is required urgently. The existing numerical sequence of 6 in. × 4 in. cards arranged by identification number of the translators will still be required to translate into names and addresses the appropriate numbers revealed by the punched cards. The new system is expected to be somewhat faster in operation than the present method, but the chief value of using the punched cards is in the opportunity afforded of demonstrating a simple punched-card installation to visitors to Aslib's headquarters.

CONCLUSION

The Aslib Register of Specialist Translators is unique in this country by virtue of the high standards of combined linguistic and scientific/technical competence of its members. Whilst every care is taken in the vetting of applications, Aslib will continue to rely to a great extent on the comments of employers of individual translators to ensure that the standard remains high. Any comments about the register and its method of operation will be welcomed by Aslib, and any further information gladly supplied.

TABLE I. NUMBER OF TRANSLATORS REGISTERED FOR EACH LANGUAGE

Afrikaans	3	Flemish	2	Polish	23
Arabic	4	French	159	Portuguese	15
Armenian	1	German	155	Rumanian	5
Bulgarian	3	Modern Greek	3	Russian	77
Chinese	5	Hungarian	12	Serbo-Croat	7
Czech	14	Icelandic	1	Spanish	49
Danish	21	Italian	61	Swedish	22
Dutch	42	Japanese	9	Turkish	3
Esperanto	1	Latin	4	Ukrainian	2
Estonian	1	Norwegian	21		
Finnish	2	Persian	1		

TABLE 2. ANALYSIS OF REQUESTS FOR TRANSLATORS BY LANGUAGE 1958–60

1958		1959		1960 (January–May)		TOTAL	
Language	*Requests*	*Language*	*Requests*	*Language*	*Requests*	*Languages*	*Requests*
German	101 (30%)	German	117 (27%)	German	47 (26%)	German	265 (27%)
Russian	52 (15%)	Russian	63 (14%)	Russian	22 (12%)	Russian	137 (14%)
Japanese	52 (15%)	French	44 (10%)	French	16 (9%)	Japanese	107 (11%)
French	33 (10%)	Japanese	40 (9%)	Japanese	15 (8%)	French	93 (9%)
Italian	22 (6%)	Italian	35 (8%)	Czech	14 (8%)	Italian	66 (7%)
Czech	14 (4%)	Swedish	21 (5%)	Dutch	13 (7%)	Czech	45 (5%)
Dutch	10 (3%)	Czech	17 (4%)	Polish	10 (5%)	Dutch	36 (4%)
Spanish	9 (3%)	Spanish	15 (4%)	Italian	9 (5%)	Swedish	36 (4%)
Swedish	7 (2%)	Dutch	13 (3%)	Swedish	8 (4%)	Polish	26 (3%)
Polish	6 (2%)	Finnish	11 (2%)			Spanish	24 (3%)
Rumanian	6 (2%)	Polish	10 (2%)			Finnish	11 (1%)
		Hungarian	10 (2%)			Hungarian	10 (1%)
						Rumanian	6
Other (9 languages)	29 (8%)	Other (11 languages)	44 (10%)	Other (11 languages)	29 (16%)	Other	102 (11%)
TOTAL	341		440		183		964

NOTE.—The discrepancy between the numbers of requests for each year in Tables 2 and 3 is explained by the fact that one request may cover more than one language or one subject. Percentages are approximate.

TABLE 3. ANALYSIS OF REQUESTS FOR TRANSLATORS BY SUBJECT 1958–60

1958		1959		1960 (January–May)		TOTAL	
Subject	*Requests*	*Subject*	*Requests*	*Subject*	*Requests*	*Subjects*	*Requests*
Chemistry	82 (24%)	Chemistry	74 (16%)	Mechanical Engineering	24 (12%)	Chemistry	179 (18%)
Medicine	27 (8%)	Medicine	38 (8%)	Chemistry	23 (11%)	Medicine	77 (8%)
Physics	25 (7%)	Metallurgy	35 (8%)	Metallurgy	20 (10%)	Electrical Engineering	75 (8%)
Electrical Engineering	25 (7%)	Mechanical Engineering	33 (7%)	Electrical Engineering	19 (10%)	Metallurgy	75 (8%)
Metallurgy	20 (6%)	Electrical Engineering	31 (6%)	General Engineering	13 (6%)	Mechanical Engineering	73 (7%)
General Engineering	17 (5%)	General Engineering	24 (5%)	Medicine	12 (6%)	General Engineering	54 (5%)
Mechanical Engineering	16 (5%)	Chemical Engineering	19 (4%)	Physics	11 (6%)	Physics	48 (5%)
Chemical Engineering	14 (4%)	Civil Engineering	15 (3%)	Civil Engineering	7 (3%)	Chemical Engineering	38 (4%)
Fuels	14 (4%)	Electronics	15 (3%)	Biology	6 (3%)	Electronics	27 (3%)
Electronics	12 (3%)	Physics	12 (3%)	Chemical Engineering	5 (2%)	Fuels	23 (2%)
Agriculture	10 (3%)	Agriculture	9 (2%)	Textiles	5 (2%)	Civil Engineering	22 (2%)
Biology	9 (3%)	Mathematics	9 (2%)			Agriculture	19 (2%)
Building	8 (2%)	Petroleum technology	9 (2%)			Biology	15 (1%)
Nuclear Engineering	8 (2%)	Textiles	8 (1%)			Textiles	13 (1%)
						Mathematics	9
						Building	8
						Nuclear Engineering	8
Other technical	47 (13%)	Other technical	115 (24%)	Other technical	44 (22%)	Other technical	206 (20%)
Non-technical	14 (4%)	Non-technical	31 (6%)	Non-technical	14 (7%)	Non-technical	59 (6%)
TOTAL	348		477		203		1,028

Letters to the Editor

CONTROL PROCEDURE FOR LIBRARY LOANS

Dear Madam,

The following is a description of a simple system in use in this library. The Browne charging system is used, but in addition to the usual book card bearing accessions number, author, and short title, there is a second book card which has on it the accessions number only. When a book is borrowed both cards are placed in the borrower's tickets, which are arranged in order of accessions number behind guides showing dates due for return.

Each morning the second book cards for the books issued the day before are removed and on them is stamped the dates the books are due for return. These second cards are removed to a separate file which is by order of accessions number only. Before the books which were returned the day before are shelved, their second book cards are extracted from this file and placed in them. These two operations are carried out at one time in order that no extra time may be required when books are issued or returned.

When a book is asked for and cannot be found on the shelf, its accessions number is easily ascertained from the author catalogue, and the file of second book cards will show when it is due for return and who has it out, or its absence from the file will indicate that it is lost or misplaced. Renewal requests are simplified as borrowers soon learn to quote accessions numbers, which is all that is required to locate a book in the borrowers' register.

One of the chief advantages of the system is that once a book is provided with its two book cards, no further records need be made except the stamping of dates. A library using the Browne system can easily introduce this extension, by making each day second book cards for books issued which have not already got them.

The system does not show what books an individual borrower has out on loan, but this information is not often required and in any case should be obtainable from the borrower.

Yours faithfully,
C. W. PENDLETON,
Librarian,
The Chartered Insurance Institute,
20 Aldermanbury,
London, E.C.2.

30th May 1960.

Dear Madam,

At the Aslib Conference on Technical Translation* held some time ago it was pointed out that the original text should be taken when counting the number of words to be charged for. It at once occurred to me that this must work out very differently in the case, for instance, of German and French respectively. To take a by no means extreme example which I recently came across: 'Überlebenswahrscheinlichkeiten', i.e. probabilities of survival—one word if you count the German, three if you count the English. Doubtless, however, a little common sense would in most cases solve all such questions equitably. Nevertheless the point seems worth raising.

Yours faithfully,
GODFREY SCEATS,
194 Cooden Drive,
Bexhill-on-Sea.

15th June 1960.

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* *Aslib Proceedings,* vol. 12, no. 4, pp. 129–68.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

Books and Pamphlets

AHLSTEDT, VALTER, *and others*
Biblioteksproblem: några synpunkter på biblioteksarbetets organisation och rationalisering: andra samlingen; redigerad av Valter Ahlstedt, Knut Knutsson och Folke Löfgren. Stockholm, Natur och Kultur, 1959. 168 pp. *Sw. Kr.* 10.

*AMERICAN LIBRARY ASSOCIATION
A.L.A. membership directory, 1959, with lists of national, state, provincial and local library associations, agencies, supervisors, periodicals. Chicago, the Association, 1960. xi, 432 pp. $5.

ASSOCIATION OF BRITISH SCIENCE WRITERS
A guide to press arrangements for scientific, medical and technical conferences; edited by Ronald Bedford. London, British Association for the Advancement of Science, [1960]. 31 pp. *2s 6d* (*3s 6d* interleaved).

ASSOCIATION OF RESEARCH LIBRARIES
Minutes of the 52nd meeting of the Association of Research Libraries, together with the Conference on the Farmington Plan, January 26, 1959, University of Chicago. Chicago, the Association [1959]. [2], 46 pp. $2.

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BURTON, A. J., *and* MILLS, R. G.
Electronic computers and their business applications. London, Benn, 1960. xii, 325 pp. illus., diagrs. *45s.*

*COMMONWEALTH universities year book, 1960: a directory to the universities of the British Commonwealth and the handbook of their Association. London, Association of Universities of the British Commonwealth, 1960. xxxi, 1509 pp. *84s.*

DANTON, J. PERIAM, *editor*
The climate of book selection: social influences on school and public libraries: papers presented at a symposium held at the University of California, July 10–12, 1958. Berkeley, University of California School of Librarianship; London, C.U.P., 1959. vii, 98 pp. *20s.*

DELAVENAY, EMILE
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Directory of periodicals publishing articles in English and American literature and language. Denver, A. Swallow [1960]. 178 pp. $3.50.

*GUIDE to American directories: a guide to the major business directories of the United States, covering all industrial, professional and mercantile categories. 4th ed. New York, B. Klein & Co., 1960. x, 424 pp. $20.

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World directory of agricultural libraries and documentation centres; edited by D.H. Boalch. Harpenden, the Association, 1960. [6], 280 pp. *35s.*

*INTERNATIONAL COMMITTEE FOR SOCIAL SCIENCES DOCUMENTATION, *and* INTERNATIONAL SOCIOLOGICAL ASSOCIATION
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Index of chemistry films: a comprehensive list of films and filmstrips on chemistry and related topics, 1959. London, the Institute, 1959. IX, 150 pp. 5*s*.

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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

JAPANESE SCIENTIFIC and TECHNICAL translations and abstracts by bi-lingual, Japanese-born translator. D. Jackson, 24 Lockington Road, London, S.W.8. Tel.: Macaulay 2950.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC (ENG.), FIL, 140 Wightman Road, London, N.8. Tel. Stamford Hill 8564.

TURKISH, FRENCH, and ITALIAN translations. All subjects. F. P. Scott, 4 Uphill Grove, Mill Hill, London, N.W.6. Mill Hill 3364.

WILFRED E. GOODAY, ARSM, DIC, MIMM, FIL. Technical translation from French and Roumanian. 161 Rivermead Court, London, S.W.6. Renown 1912.

Appointments vacant

ASLIB invites applications for the post of EDUCATION OFFICER to make a special study of the training requirements of special librarians and information officers and to organize frequent short courses in this field. Candidates must possess a university degree or equivalent qualification and have several years' experience in a special library or information department, preferably in industry. Lecturing ability and a qualification in librarianship are also desirable. Starting salary within the range £1,250–£1,750 p.a., plus superannuation benefits. Applications, naming two referees, to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

ASSISTANT LIBRARIAN required for Central Technical Library and Information Service of a large expanding group of widely varying engineering companies in the Midlands area. Applicants should be chartered librarians aged between 25 and 35 years, and preferably have industrial experience. The successful candidate will deal with cataloguing, classifying (UDC), reference work, correspondence, written inquiries, and preparation of reports. Experience of staff control is required. Commencing salary will be at least £700 per annum; contributory pension scheme and usual large company facilities. Please write, giving full details of personal background, experience, and initial salary required to Personnel Manager, Messrs Rubery Owen & Co. Ltd, P.O. Box 10, Darlaston, Wednesbury, Staffs.

ASSISTANT required in commercial section of Information Department to select and edit material for an internally distributed news bulletin and to answer inquiries. Ability to type and some library training would be useful. Age preferably 20–30, salary according to age and experience. Apply in writing to Mr F. W. Masham, Albright & Wilson Ltd, 1 Knightsbridge Green, London, S.W.1.

DSIR, HQ, London, S.W.1, requires EXPERIMENTAL OFFICER/ASSISTANT E.O. in scientific library for duties that include assisting with trial projects for announcement of new report material received both from overseas and from home sources. A science degree, or equivalent, facility in abstracting and/or critical technical writing and good working knowledge of German or French expected. Salary (under review): (men) E.O. £1,005–£1,233; A.E.O. £570 (age 22)–£880. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting reference F.94/OA.

LIBRARIAN and INFORMATION OFFICER required by diesel and electrical engineering company. Applicants must be chartered librarians, should have special library experience, familiarity with engineering, and a sufficient knowledge of patent procedure to act as a source of information on company patents and their progress. A knowledge of languages would be an advantage. Write, stating age, qualifications, and experience to Staff Employment Officer, C.A.V. Limited, Warple Way, Acton, London, W.3. (Ref. L.)

QUALIFIED CHEMIST required in Analytical Laboratory dealing food materials. Slough/Maidenhead area. Previous experience in food analysis an advantage, but not essential. Starting salary not less than £700 p.a. Contributory pension scheme. Canteen. Write to Chief Chemist, Weston Research Laboratories Ltd, 644 Bath Road, Taplow, Maidenhead, Berks.

RUSSIAN TRANSLATORS and ABSTRACTORS (part-time) required for all scientific and technical fields. Please send full particulars including special subjects, qualifications, and previous experience to Technical Information Company Ltd, Chancery House, Chancery Lane, London, W.C.2.

For Disposal

Daily weather reports and daily aerological reports for Great Britain, 1957 and 1958. No charge. Apply Librarian, Decca Radar Research Laboratories, Lyon Road, Hersham, Walton-on-Thames, Surrey.

For Sale

Journal of the Iron and Steel Institute, vol. 186, parts 1, 2, 3; vol. 187, parts 1, 2, 4; vol. 188, parts 1, 2, 3, 4; vol. 189, parts 1, 3, 4. Russian journals: *Stal*, 1957, nos. 9, 10, 11, 12; 1958, nos. 1 to 12 inclusive; *Metallurg*, 1957, no. 1. German journal *Stahl und Eisen*, vol. 79, nos. 7 and 9.

Wanted

The Engineer—April 10, 1959. Technical Librarian, Short Bros. & Harland Ltd, Queen's Island, Belfast 3, Northern Ireland.

COURTAULDS

ABSTRACTOR/TRANSLATOR

A CHEMIST (with a sound knowledge of German) is required for the TECHNICAL INFORMATION BUREAU of Courtaulds Limited at Coventry.

The work entails the abstracting of scientific and technical journals, the translation of German papers as required, and general participation in the activities of the Department, which exists for the purpose of providing a technical information service for other Departments throughout the Company.

Candidates should have a degree or equivalant qualification; an interest in information work and preferably, experience in this field.

Candidates should write for a detailed form of application to:

The Director of Personnel,
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16 St. Martins-le-Grand,
London, E.C.1

quoting reference number C.28.

CALCUTTA UNIVERSITY CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 **September 1960** **Number 9**

ASLIB CALENDAR

SEPTEMBER

WEDNESDAY 28th – FRIDAY 30th. Annual Conference at the Grand Hotel, Brighton.

OCTOBER

TUESDAY 4th – WEDNESDAY 5th. Course on work with patents. See paragraph below.

FRIDAY 7th. Technical Translation Group inaugural meeting. See paragraph below.

TUESDAY 11th. Fuel and Power Group visit to DSIR Lending Library Unit.

TUESDAY 11th – THURSDAY 13th. Junior introductory course to information work. See paragraph below.

THURSDAY 20th. Winter meeting. See paragraph below.
Engineering Group meeting. See paragraph below.

NOVEMBER

FRIDAY 4th – SUNDAY 6th. Northern Branch Conference in York.

WEDNESDAY 9th. Fuel and Power Group visit to Messrs Webb, Son, & Company Limited.

1961

FEBRUARY

FRIDAY 3rd. Scottish Branch Annual General Meeting at East Kilbride.

MARCH

WEDNESDAY 29th. Midlands Branch Annual General Meeting.

APRIL

FRIDAY 21st – SUNDAY 23rd. Electronics Group annual conference at Ashridge College, Berkhamsted.

SEPTEMBER

WEDNESDAY 6th – SATURDAY 16th. FID Conference in London.

Telex at Aslib

The Telex system has been installed and in operation at Aslib headquarters since Monday 29th August. Telex no. 23667; answer-back code 'Aslib London'.

Winter Meetings

The first meeting of the 1960–1 session will be held at Aslib on Thursday 20th October at 5 for 5.30 p.m., when Mr A. H. Holloway will speak on 'The cost of co-operation'. Other plans include a brains trust on special librarianship in November and a visit to DSIR Lending Library Unit early in December.

Junior Information Course

A Junior Introductory Course to Information Work will be held at Aslib from Tuesday 11th to Thursday 13th October. The course is intended for those who have recently entered library and information work or wish to do so. It will introduce students to library techniques, including the use of catalogues, and to simpler types of reference work, giving reasons for choice of method. The lecturers will be Mr L. H. Miller, Information Officer, the British Iron and Steel Research Association, Research and Development Services, Sheffield; and Mr G. M. Paterson, BA, ALA, Librarian, Aslib, who will take the final session on professional reading. The course will include visits to libraries and information departments of industrial, research, and institutional organizations where methods can be seen in practice.

Course on Work with Patents

A Course on Work with Patents and Elementary Patent Practice will be held at Aslib on Tuesday and Wednesday 4th and 5th October. The lecturer will be Mr Felix Liebesny, BSC, ALA, FIINFSC, FIL, Librarian, the British Aluminium Company Limited.

The course will cover the procedure of application, completion, and opposition, relating to British and foreign patents; patents as a source of information; abstracting patents; equivalents and translations; and trade marks. It will terminate with a visit to the Patent Office Library. The course will not deal with detailed aspects of Patent Law.

Economics Group

The Group went for its annual outing in July to Slough and Windsor. The specific object was a visit to the Information Department of Urwick, Orr & Partners. This firm of management consultants runs a management centre at a very old building on the outskirts of Slough. Baylis House was built in 1670 for an official at Eton College and has now been skilfully adapted for use as a training centre so that several courses can be run simultaneously. Members were shown the method of organizing such a system of courses and also those employed in collating, indexing, and storing the many reports which are issued by consultants in the field and at head office. One of the many activities of this centre is the library, which is housed in a seventeenth-century panelled room. The twenty-odd participants in the Group visit then went on to Windsor to pay a brief call on the Guildhall Museum. This kind of annual excursion is most enjoyable and profitable because it gives an insight into the activities of other organizations.

Engineering Group

A visit to Aslib Library and Information Department has been arranged for Thursday 20th October at 4 p.m. Members will have an opportunity also to see the Commonwealth Translations Index, held in the United Kingdom by Aslib. Tea will be served at 5 p.m. and the Aslib Winter Meeting will follow at 5.30.

At a Group meeting to be held at Aslib at 5.30 p.m. on Wednesday 30th November, the speaker will be Mr J. G. Hall, Librarian, Esso Research Ltd, on 'making the most of what you've got'. This talk is expected to be of special interest to younger members in charge of small libraries and information centres. The meeting will be followed by a sherry party. It is hoped to arrange a visit to the American Library in March 1961 when it will be established in the new Embassy building in Grosvenor Square.

Technical Translation Group

The inaugural meeting of the Aslib Technical Translation Group* will be held at Aslib on Friday 7th October at 4.30 for 5 p.m. The meeting will be followed at 6 p.m. by a showing of three films: *Energy and matter,* in German; *Continuous casting,* a colour film in Russian; and one in the French language. All members interested in translation are invited.

Further meetings are being planned for Wednesday 9th December on Chinese scientific information, and Friday 6th January on mechanical translation from Russian.

Aslib Year Book 1960-61

Copies of the *Aslib Year Book 1960-61* have now been distributed to cover all standing orders. The Year Book is once more 'perfect' bound in limp linson covers. A lighter weight linson has been used than in former years, combined with a specially selected polymer adhesive calculated to stand up to reasonably heavy usage. Most librarians are well aware of the weaknesses of the process known (by a double misnomer) as 'perfect binding', but the results of a brief investigation last year suggested that it was in fact a suitable method for a volume of the nature of the Year Book, which is not expected to stand up to unduly heavy use, and the useful life of which is in any case limited by time. Aslib would welcome comments from members and others who make considerable or heavy use of their copies. *Aslib Year Book 1960-61* is available from Aslib, price 12*s* 6*d* to members and 18*s* to non-members.

Lectures on use of Chemical Literature

A course of lectures on the use of chemical literature will be held from Wednesday 19th to Friday 21st October in the Central Libraries, Liverpool. The course is designed to show chemists in research and industry—particularly those newly qualified—what information is contained in the literature of chemistry and how it may be retrieved. The course is organized by Dr R. T. Bottle and Dr R. M. W. Rickett on behalf of the City of Liverpool College of

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* *Aslib Proc.* vol. 12, no. 8, p. 274.

Technology in association with Liverpool Public Libraries and Ladsirlac (Liverpool and District Scientific, Industrial, and Research Library Advisory Council). Detailed programmes may be obtained from the Liverpool Technical Library, William Brown Street, Liverpool 3.

Technical Abstracts

The British Engineers' Association, 32 Victoria Street, London S.W.1, has recently published a supplement to *BEA Information* entitled *Technical Abstracts*. The supplement contains a list of abstracting services in two sections—'general' and 'specialized'. Entries are arranged under alphabetical sequence of journal title and other information given includes frequency of issue, cost, name and address of publisher, and subjects covered. Nearly one hundred services are included.

NEW MEMBERS

Corporate

Name	*Location*	*Representative*
Allott, C. S., & Son	London	L. B. Ollier
Amber Oils Ltd	London	L. J. Boys
Ampex Electronics Ltd	Reading	R. C. Legg
Anderson, James & Co. (Colours) Ltd	Scotland	Dr E. R. Inman
Associated Television Ltd	London	S. A. Bradshaw
BBC Film Library	Ealing	V. Maccoby
Barnet Instruments Ltd	Hitchin	C. R. A. Grant
Beckman Instruments Ltd	Scotland	J. R. McNally
British Leather Manufacturers' Research Association	Egham	Miss A. Wontner
Catholic Central Library	London	Father Blase Burriston
Central Electricity Generating Board	Bristol	Miss A. E. Howarth
College of Air Training	Southampton	R. E. M. Hughes
Dorset County Library	Dorchester	K. Carter
Dowsett Holdings Ltd	Stamford	A. L. Ruckley
Gallenkamp, A., & Co. Ltd	London	G. F. Adams
Hong Kong Central Government Offices	Hong Kong	
IBM United Kingdom Ltd	Scotland	Miss D. E. C. Morrison
Institut de Biologie et Medicine Experimentale	Switzerland	Dr S. Radouco-Thomas
Kolok Manufacturing Co. Ltd	London	H. A. O'Neill
Magnetic & Electrical Alloys Ltd	Scotland	S. Smith
National Cash Register Company Ltd	London	Mrs C. Morgan
Northampton Central College of Further Education	Northampton	V. A. Hatley
Portugal. Centro de Documentacao Cientifica de Instituto para a Alta Cultura	Portugal	Dr Z. Paulo
Sowerby Bridge Public Library	Sowerby Bridge	S. Robinson
20th Century Electronics Ltd	New Addington	N. B. Balaam
Vancouver Public Library	Canada	
West Instrument Ltd	Brighton	J. F. Thompson
Worcestershire County Library	Worcester	Miss A. P. Barnes

Individual

Beck, Miss G. M. K.	London
Necker, W. L.	U.S.A.
Simons, E. N. (Hon. Member)	Pevensey

RETIREMENT OF DR RICHARD OFFOR

J.H.P.PAFFORD, MA, FSA, FLA

IN February of this year Dr R. Offor retired from his post of Library Adviser to the Inter-University Council for Higher Education Overseas, and there are many reasons why his retirement calls for special notice. In the first place it closes an unbroken period of library service of some sixty years. This record may have been exceeded in the past—possibly, for example, by Henry Guppy and by B. M. Headicar—but few are likely to surpass it in the future. And Dr Offor's long career has been of great distinction. As a young man he joined the staff of the Library of University College, London in 1901 and remained in that Library, serving under R. W. Chambers, until 1919. Dr Offor was then appointed University Librarian at Leeds, a post which he held until his retirement in 1947 when he was made Emeritus Librarian; and in that same year he was appointed by the Colonial Office as Library Adviser to the Inter-University Council for Higher Education Overseas.

When he retired from Leeds former members of his staff and others associated with him at Leeds combined to produce a *Festschrift* for him which took up the whole number of the *Journal of Documentation* issued in September 1947. The introductory note to that number—by Mr G. Woledge—gives a brief survey of some of Dr Offor's work and an appreciation of some of his qualities, and there is a bibliography of Dr Offor's writings by Mr J. W. Scott. That bibliography could, of course, now be considerably extended, and indeed barely two months after it was printed appeared *A descriptive guide to the libraries of the University of Leeds,* which is one of the earliest and best of those works which not only describe and give a history of a research library but which are also practical indexes to its contents. The review of this work in the *Library Association Record* (November 1948, p. 314) speaks of it as 'a model of its kind' and adds: 'A book like this does more to raise the status of the librarian than any amount of talk about that subject could do. Indeed, if anyone were heard to question the difficulty and importance of the librarian's task, it would be no bad answer to put this book into his hands.' Dr Offor developed the collection at Leeds from 85,000 items in 1919 to 403,000 in 1947, which considerably improves on the American rate of doubling every sixteen years. But not only were the increases great in quantity; they were also of fine quality. Dr Offor worked with the knowledge and spirit of the scholar and research worker, and his accounts of the special collection he built up of translations of English into French and of books in French on British affairs are a valuable commentary on the cultural and literary relationships between the two countries in the seventeenth and eighteenth centuries. These articles were published by the Leeds Philosophical Society from 1928 to 1947.[1]

Then, although he had more than his share of ill health, Dr Offor, at the age when many men are glad to retire, turned himself with unabated vigour to the task of assisting in the development of the libraries of the colleges overseas associated with the Inter-University Council in Africa (Legon, Ibadan, Makerere, Salisbury and Fourah Bay), Malaya, Hong Kong, the West Indies, Khartoum and Malta. He made personal visits to many of these in 1950, 1951 and 1952, and he has worked enthusiastically in giving them all the guidance and assistance in his power: and that has been considerable indeed.[2]

All his work has been marked with enthusiasm. He has enjoyed his career and has enjoyed his hobbies—which include hill walking, ecclesiastical architecture and collecting Bunyan. His energetic happiness has been, and is, stimulating to his friends in and outside the profession, and his personal kindness and understanding of deep service to more than will ever be known. His efficiency in selecting and bringing on good men is abundantly shown by the number of leading positions in the library world which are now held by men who had the privilege of working under him at Leeds, but there are very many more who are deeply in his debt for the gift of his warm-hearted friendship.

He has followed in the footsteps of his grandfather, George Offor, in collecting the works of Bunyan, and with characteristic generosity he is bequeathing his collection to Elstow Moot Hall.[3] All his colleagues and his many other friends will wish him, with Mrs Offor, many years of happy retirement.

REFERENCES

1. Details are given in *Journal of Documentation,* Sept. 1947, p. 66.
2. See his excellent account of these libraries in *Libri,* vol. 5, 1954, pp. 54–75.
3. *Library Association Record,* April 1960, p. 117.

SOME ASPECTS OF TECHNICAL EDITING*

JAMES REVIE

Technical Editor, United Kingdom Atomic Energy Authority, Dounreay Experimental Reactor Establishment

Scottish Branch Conference, Edinburgh, 5th February 1960

BEFORE I get on with the business for which I am here this morning, there is one preliminary that I would like to voice. That is that any opinions I may express with regard to editorial or technical-writing conventions—for I believe it is impossible completely to separate the tasks of the writer and the editor—are my own, and may not necessarily be reflected in the guides or house styles of any particular technical-publishing organization to which I am, or have been, attached. Indeed, some of the concepts to which I hope to draw attention may be reflected nowhere else at all, at least in print, and if in the ensuing discussion I be roasted for some seeming heresy I thus may not be able to quote chapter and verse for my salvation.

A primary concept, which is not always sufficiently appreciated, is that the reporting of experimental studies or other work can be considered to be an integral part of the work itself. The quality of the reporting can therefore influence assessment of the study or work as a whole, and thus can affect, for good or bad, the reputation of the author concerned. It can also affect the reputation of the organization under whose auspices the report is issued, and this is where the function of the technical editor begins to appear. The point for the moment is that, in view of the factors mentioned, many papers dealing with various aspects of technical writing have been compiled, and most professional technical-publishing bodies have presented guides, or have laid down definite instructions, regarding reports intended for submission to them for publication.

Many aspects of reports-writing conventions and techniques have thus been largely covered, and indeed have been reiterated. Other aspects have, however, not received the same degree of attention, and purposes of the present paper are at least to mention some of these, and again to reiterate others. It is hoped that the data will be of interest, and even assistance, to special librarians and to information officers, both in their capacities as such and in a role which is sometimes thrust upon them in smaller organizations, namely that of seeing matter through the press or other reproduction medium. It is also hoped that the data will be of help to authors in the appreciation by them of some of the seemingly arbitrary editorial changes which may be made in their papers.

For convenience, the presentation will be made under the headings of (1) preliminary matter, (2) introductory matter and headings, (3) body of the report, (4) appendices, and (5) general considerations.

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* Abridged version.

PRELIMINARY MATTER

The initial preliminary to a report is generally a title, and other preliminary matter can be in the form of synopses or contents lists. The first consideration I would like to advance is that none of these items is part of the report itself.

The title should be brief, and should as far as is possible within the confines of that requirement clearly refer to the subject which is to be considered.

A contents list can be a valuable preliminary to a long and detailed paper, but is a superfluity when prefixed to a short report, or to one dealing with only a few aspects of a subject.

The synopsis, like the contents list, can be of value or be merely another superfluity, according to the circumstances. If used, it should be something more than a mere repetition of the title in another form, a frequent failing with short synopses, and it should consist of a single paragraph prefacing and physically distinct from the text. In letterpress printing this is usually achieved by presenting the synopsis in indented small type.

A synopsis is not an abstract, and should not be so named, and the term 'summary' should be reserved for designation of a final summation of the reported matter, if such summation should be included.

INTRODUCTORY MATTER AND HEADINGS

The actual report must start with some form of introductory matter, however brief the latter may be. In good technical-reporting practice the introduction usually consists of a short account of the background to the subject with which the report is concerned, followed by a clear statement of why the report is considered necessary or desirable. The last point is particularly important, but is often missed, to the detriment of the coherence of the report as a whole.

Some indication of the manner in which the report is designed to achieve its object (for example, a statement of any limits of treatment or of any particular grouping of the subject matter) is also a help, not only to the reader, abstractor, indexer, librarian, information officer, cataloguer, etc., but often also to the author himself.

The introductory matter usually calls for the use of the first heading in the report, namely 'Introduction'. This is not obligatory, however, and indeed is best omitted when the introductory matter is brief and plainly introductory. If used, the heading is a main heading, but unlike other main headings is not normally followed by sub-headings; these in most cases would be superfluous to a properly presented introductory statement.

The functions of headings are to label the distinct compartments within which the various arguments and expositions which go to make up a report should fall, and incidentally to break up a mass of textual matter into a more appetizing and more easily digestible form. Care should be taken that the labels are correct, or in other words that the matter discussed or presented under a particular heading or sub-heading is in complete accord with that heading or sub-heading. Deviation from this logical requirement is unfortunately frequent.

BODY OF THE REPORT

The body of a technical paper can be considered as the matter between the introduction and the conclusions, if any. It invariably includes verbal text, and in most cases one or more other types of report matter, such as tables, illustrations, chemical formulae and equations, and mathematical expressions.

1. *Verbal Text*

Grammar

Some people imagine that the only functions of an editor are to correct any obvious grammatical errors, and to insert or delete punctuation marks. This is actually far from being the case, as has been well indicated by one of the participants in the survey[1] which is the basic theme of the present Conference. Nevertheless, grammatical aspects *are* important, but it is obviously impossible within the confines of a paper such as the present adequately to deal with them, much as I would like to do so. I may have time merely to name some of the broken-down hacks continually trotted out from some authors' stables for use and public exhibition. But perhaps I may be permitted to ride one particular hobby-horse of my own.

The hacks to be avoided include:

The ambiguous pronoun.
The dangling or unattached participle.
The singular 'data'.
The obnoxious 'due to'.
The overworked adjective or verb (where one part of speech is cruelly forced to do the work of two or more).
The worn-out cliché.
The unexplained textual abbreviation or symbol.
The arbitrary abbreviation of quantity nouns or measures.
The urge towards excessive use of capital letters.

The last-mentioned, by the way, is generally considered to be an occupational disorder among school-children, but any cognizant editor will confirm that it persists into middle and old age.

Apart from the inelegance and the impression of carelessness or worse resulting from the uses, or rather misuses, mentioned, serious misunderstandings could easily arise from them. For instance, there is a story—if it is not true it deserves to be—of the writer who recommended that some component part should be fabricated in S.S. The recommendation was duly passed to the fabrication people, and the stainless steel part was duly produced and fitted, into a place where sintered steel had been intended.

Hyphenation

But now to my hobby-horse, hyphenation.

The flexibility of English makes the language an admirable medium for technical writing, but care must be taken that this very flexibility does not lead to ambiguity or grammatical bad form. For instance, 'gas' is a noun, but acts as an adjective when it describes its own carrier, that is, the main, thus permitting spoken or written differentiation of gas mains from other types of main. Of course, a gas main becomes dirty, in which case it is termed a 'dirty gas main'. On gas-producing plants, however, the crude gas is known as dirty gas, and the main in which it is conveyed to the gas-cleaning plant is properly termed a 'dirty-gas main', the adjective 'dirty' and the noun 'gas' being married by the hyphen to form a compound adjectival term qualifying the noun 'main'.

Thus a dirty-gas main is a main for the conveyance of dirty gas, and a dirty gas main is a gas main which is dirty. If not, it is an example of dirty writing.

Such compounding is a great help towards crisp, concise composition, and is seen in optimum use in high-class technical abstracting journals and in the indexes to them, where clarity is not sacrificed for necessary brevity. How thoroughly I agreed with the—to me—unknown lady who, in the course of the discussion of a paper at the full Aslib Conference last October, said that one of the best exercises for a would-be technical writer was the composition of abstracts.

Abbreviations

I have referred, in passing, to the abbreviation of words. Another type of abbreviation is the abbreviation of quantity nouns or measures. This is a matter which has always been subject to the idiosyncrasies or personal opinions both of authors and editors, and in an attempt to introduce national consistency a British Standard Specification[2] has been drawn up.

The provisions of the Standard have, however, evidently not been acceptable *in toto* to all editors, but this is not necessarily an unhealthy sign; if two editors agreed on every point concerning the various conventions involved in their work an inference could be that at least one of them was not a capable editor. The situation is somewhat akin to that in the information-officer field with regard to indexing or classification systems.

The British Standard mentioned has the advantage of being in line with the abbreviation practice of good foreign journals, such as *Comptes rendus*, but the provisions of the Standard may not be completely suitable for editors without a letterpress printing system or an equivalent reproduction process behind them.

Apart from abbreviations of words and designations of units, i.e. of quantity nouns and measures, there is also the case of abbreviations of names of organizations and the like. Indiscriminate abbreviation in this respect can be a source of annoyance or frustration to the reader, and authors should remember that an abbreviation which is a colloquialism to them might not be so to everyone.

As is usually so, there is a convention to cover the point, and in this case the convention is that a designation in this category should be written out in full at the time of first mention in the paper, and the abbreviation inserted immediately afterwards, in brackets. The abbreviation alone can then be used with ease and safety thereafter in the paper.

2. *Tables and Illustrations*

One might think that there was not much to say about tables. Yet at least one extensive treatise has been devoted to that subject alone, and with an eye on the clock I think it best merely to refer to it. It is a guide to usage in the United States Agricultural Marketing Service.[3] For those of you who might not be able to obtain the very worthwhile document referenced, I would refer to the sports columns of the Sunday newspapers, where quite complicated tables relating to the performances and placings of football teams in their respective

Divisions are presented clearly and concisely. Seriously, I would suggest that there is much to be learned from such a source.

The only other guidance I can give at the moment is to work from the general to the particular, and to discard the tabular form altogether if it is found that an excess of cursive matter is obtruding itself in the body of the table.

Editorially, four basic considerations apply to tables. These are (1) that each table should be numbered, (2) that each should be referred to, by number, in the text, (3) that each should bear a short descriptive heading or caption, and (4) that all should be concise to the extent that conciseness may override every other consideration except clarity and appearance.

Other considerations are that no matter what reproduction process is used, tables are more difficult to 'set up' than is ordinary running text, and that long tables are not the most palatable reading matter. Thus the tabular form of data presentation should not be employed any more than is necessary.

All the considerations mentioned apply also to illustrations, which again I must skip as far as anything like detailed discussion is concerned. And illustrations, like tables, are not intended to be vehicles for expression of masses of verbal matter, i.e. words. The text, appendices, or footnotes are the places for that.

3. *Chemical and Mathematical Expressions*

Looked at from the editor's chair, chemical and mathematical symbols have something in common. They both are means of expression in which, if carelessly presented by the author, the preceding and succeeding contexts may not be much help to the editor in any attempt he may make at clarification. And after or before the editor is the typist, who can not be expected to elucidate doubtful expressions, and to whom an alpha may be a small a, beta a big B, sigma a small s, and so on. These remarks apply particularly to superscripted and subscripted matter for which the typewriter will be the basic reproduction medium, for example, in reports intended for reproduction by means of wax stencils, where the insertion of corrections or addenda is particularly difficult.

The situation is not quite so serious where the final reproduction medium is the letterpress printing process. Here the editor has behind him specialized equipment and the services of trained compositors and readers, with whom he can communicate in a definite sign language to indicate the manner in which material should be presented. But even under the best reproduction conditions, carelessly rendered symbols and such expressions can be a source of, at the least, delay, and, at the worst, serious error.

APPENDICES

Matter which, though considered necessary or desirable for inclusion in a report, would unduly interrupt the exposition in the body of the paper should be presented in the form of an appendix or appendices. Examples of such matter are lengthy mathematical discussions of particular points in an otherwise non-mathematical paper, and detailed descriptions of apparatus in a paper not basically dealing with design of equipment.

Appendices should be numbered in roman numerals, and should each bear a title. If tables or illustrations are included, these should be numbered in a manner distinctive from the numbering of any tables or illustrations in the report itself; use of capital roman letters (A, B, C, etc.) is suggested for this purpose.

References

Remembering my own admonition that matter within a labelled compartment should comply with the writing on the label I shall, for the purpose of the present paper, regard the reference list, where one is to be included in the report, as a form of appendix.

In the survey by Scott[1] the sources of information to technologists were among the items considered. In practice the reference list is such a source, indicating as it does the existence of other papers in the same field, or with some bearing on the subject. Care should thus be taken that the references are correct, and are as full as possible. For instance, I have always been of the opinion that where a paper as a whole is being referred to, and which has appeared in a journal with other papers, the first and last pages of the paper concerned should be referenced, for the convenience of any interested party who may desire to order a photocopy.

As is the case with tables and illustrations, I have the feeling that referencing is sometimes overdone, perhaps under the impression that a long reference list is an indication of extensive reading on the part of the author. Often, however, when the accuracy of a reference is queried, one finds that the author has never actually seen the original paper concerned.

GENERAL CONSIDERATIONS

There is much that I have necessarily had to gloss over, or not mention at all. But I hope I have been able to show that an editor works, or should work, to definite logical concepts or conventions, formulated by him or to him on the basis of experience, training, or the need for consistency, whether that consistency be dictated by standards, house styles, etc., or be merely a reflection of an ordered mental process. There are two particular situations that I know of where ignorance of or flouting of conventions can lead to real trouble; one is the editor's chair and the other is at the bridge table. On the other hand, a knowledgeable and omnipotent editor can be one of the people who can help selectively to reduce the embarrassing flood of technical print by nipping off some of the unoriginal, repetitive, prolix, or worthless matter at the source—again a point well taken by Scott.

REFERENCES

1. C. SCOTT, 'The science of science; what they read and why'. *Discovery,* vol. 20, no. 3, March 1959, pp. 110–14.
2. BRITISH STANDARDS INSTITUTION, *Letter symbols, signs and abbreviations.* B.S.1991: Part 1: 1954.
3. VIOLA E. CULBERTSON *and* MARGUERITE L. HIGGINS, *Preparing statistical tables for publication. A guide to usage in the [US] Agricultural Marketing Service.* US Department of Agriculture, Agricultural Marketing Service, Agricultural Handbook no. 121, April 1957.

CLASSIFICATION: ADOPT, ADAPT, OR CREATE?

a discussion point

BARBARA KYLE
Social Sciences Documentation

THERE has long been controversy about the rival merits of using either a recognized published classification drafted by experts in classification or a do-it-yourself system drafted by the subject specialist (albeit professionally competent as a classificationist).

The disadvantages of adopting either alternative are vociferously canvassed by the opposing parties. With recent developments in classification theory and practice we are perhaps approaching the stage where it will be evident that the alternatives presented as 'either/or' are not mutually exclusive, and that the right answer is 'both'.

Just as with many 'do-it-yourself kits', the economical and efficient compromise may be to 'do-it-yourself' from professionally prefabricated parts.

It has always been true, though not always taught in library schools, that the most efficient use of Dewey* has been by librarians who have kept the printed schedules locked in their own offices (along with other literature thought likely to be dangerous or inflammable). From these schedules they have issued to their staff and users relevant extracts as required by the growing stock of the library and incorporating such modifications, deletions, additions, and explanations as local conditions or wisdom dictated. To these schedules an index would also be added, giving appropriate and relevant entries from the printed index plus any required synonyms.

Such a system ensures that the classification available to the inquirer, staff or user, is wholly relevant to the collection it controls, and that every concept appearing in the schedules is backed by at least one entry in the catalogue. Nevertheless the 'local edition' of a given classification suffers from any basic defects of its parent: old-fashioned collocation of subjects are thus perpetuated, and new subjects often ill-provided for.

A new general classification based on facet-analysis might make it possible for schedules of terms to be provided, together with a variety of syntactical rules, and the instruction 'make your own notation, to link such of these schedules as are appropriate to the subject field(s) of your library in the most helpful order for your purposes'.

Consider two library collections of pictures adopting from a general faceted classification the following schedules among others.

1. *Schedule of objects (depicted)*
    1. supernatural

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* Any other 'preferred' name may be inserted here.

    2. human individuals
    3. human groups
    4. animals
    5. plants, etc.
    6. minerals, etc.
    7. manufactured or processed objects.

2. *Schedule of purposes of activities*
    1. growth
    2. preservation
    3. recreation
    4. adornment
    5. demonstration and communication
    6. transport

3. *Schedule of location*
    1. Africa
    2. America, N.
    3. America, S.
    4. Asia
    5. Australasia
    6. Europe, W.
    64. France
    66. Spain
    7. Europe, E.

4. *Schedule of time*
    1. prehistory
    2. antiquity
    3. medieval
    4. 1400s
    5. 1500s
    6. 1600s
    7. 1700s
    8. 1800s
    9. 1900s

5. *Schedule of size, colour, shape, etc.*
    1. size
    2. colour
    3. shape

6. *Schedule of mediums, etc.*
    1. pencil, pen and ink, crayon
    2. water-colour
    3. oil-colour, tempera, etc.
    4. engraving and other reproduction
    5. clay, plaster
    6. stone
    7. metal
    8. other

In addition to the schedules the general scheme will provide a guide to the syntax of the classification (the nuts and bolts of our 'do-it-yourself kit'). Here the user will be reminded that the facets or aspects of a subject being analysed may be made visible by a number of different symbols such as letters of the alphabet, digits, other signs of punctuation, etc.

The linear order required for the arrangement of the material when classified will depend on the ordinal value of the symbols applied to each schedule. This may be the accepted order of the alphabet, or digits 1 to 9, or a combination of these with agreement as to the ordinal relation of letters to digits with, if necessary, the use of other symbols of agreed ordinal value. Further complications are possible such as a lower-case alphabet carrying a different value from an upper case.

To return to the two collections of pictures. The first, let us suppose, is for the purpose of illustrating TV programmes. Of first importance is the object or person portrayed; second, the purpose or activity; third, in what environment; fourth, at what period; fifth, the medium used in the presentation; and lastly, the size, shape, and colour of the picture. The order of schedules might then be given the following notation.

A Schedule of objects (subdivide as 1)
B Schedule of purposes (subdivide as 2)
C Schedule of location (subdivide as 3)
D Schedule of time (subdivide as 4)
E Schedule of mediums (subdivide as 5)
F Schedule of size, etc. (subdivide as 6)

A note might state that the digit 9 can be used to introduce a list of proper names anywhere in the schedules. This notation would ensure that all pictures of donkeys come together at A4,

Donkeys for recreation (pets) A4 B3
Donkeys for transport nearby at A4 B6
and Donkeys for transport in Spain at A4 B6 C66
Stevenson's donkey Modestine A49 Mod.

The second collection of pictures belongs to a library of Art History. Here the subject of the painting is probably of little interest, whereas the country, period and name *of artist* may be vital. A possible order of schedules might be:

PICTURES

A by country or place of origin of *artist*
  1. Africa
  2. America, N.
  3. America, S.
  4. Asia
  5. Australasia
  6. Europe
  64. France
  66. Spain
  7. Europe E.
B by period of *artist* (subdivide as 4)

C	by name of *artist* in alphabetical order	
D	mediums	(subdivide as 6)
E	subject—personality	(,, ,, 1)
F	subject—activity	(,, ,, 2)
G	1. size 2. shape 3. colour	

This will ensure that all Spanish painting will come together at A66, all eighteenth-century Spanish painting at A66 B7, all by Goya at A66 B7 C Goya, all oils by Goya at A66 B7 C Goya D3.

The classified catalogues of these two collections will appear quite different to the casual observer, each will be appropriate for its purpose, and to the trained library user both will be understood after brief study of the principles on which each has been derived from the parent general scheme.

Thus given a logical faceted general scheme any number of special schemes may be made to suit special needs.

Some of those who are at present interested in the creation of such a general scheme are attempting to make lists of terms which would be widely useful to a number of different users.

Such a list of human beings differentiated by age, sex, relationship, genetic and psychological factors, nationality and language spoken (to mention only some of the characteristics), would be of great use to all who have to classify material in the field of the social sciences.

Similar lists of artefacts differentiated by material make-up and purpose could also have wide utility.

Co-operation between those who advocate the use of a general classification and those who favour *ad hoc* specialist schemes may lead to a new phase of creativity in classification which will benefit both parties. In these notes when speaking of a general classification I do not mean an international scheme but one covering all fields of knowledge within a given culture pattern and using a common language.

ASLIB INFORMATION DEPARTMENT

a statistical review over ten years

LEO GOLDSTONE
Head, Aslib Information Department

IN the first quarter of 1951 the Aslib Information Department received 239 requests from members to borrow publications. In the ten years that have passed since then there has been an astonishing increase in the work of this department so that in the first quarter of 1960 there were 2,791 requests to borrow publications, received from members—more than a tenfold increase in this one type of work alone.

The following brief comments and figures show how this increase has come about and in which particular fields it has shown itself. Each piece of work done by the Aslib Information Department is noted and numbered, and it is because of this that it has been found possible to produce reliable statistics over the period.

The position in 1951 was as follows:

Quarter-years	*General inquiries recd*	*Loan requests recd*	*Requests for document reproduction recd*	*Total*
1	477	239		716
2	602	282		884
3	557	282		839
4	623	452		1,075
Year 1951	2,259	1,255	1,038*	4,552*

A LOAN is simply a request to the Aslib Information Department by letter or telephone to borrow or find a location for any type of written material.

A DOCUMENT REPRODUCTION (DR) request is a request for a copy—photocopy or microfilm—of any type of material. These are made on specially prepared forms containing the Copyright Act declaration to be signed, etc.

A GENERAL INQUIRY is any request for information or help that does not fit into either of the other two categories. It may be a request for a literature search, for trade documents on particular products, for publishers' details, for specifications, for identification of abbreviations, trade marks, individuals, etc.

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* Until 1956 the Document Reproduction requests were not totalled quarterly, and this means that until that year the yearly total of all work done is *not* the sum of the four quarters.

At about 250 working days a year, this meant that in 1951 about eighteen requests were received each day, as against the present rate of over one hundred and twenty a day. More than half the work was concerned with various forms of inquiries and of course a small staff was adequate to deal with this flow of work. However, the signs of the increasing amount of work to be experienced by Aslib were to be seen in the trend of requests over that single year. The following year continued the pattern.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Translation index*	*Total*
1	823	656		93	1,572
2	784	940		112	1,836
3	807	953		186	1,946
4	933	1,105		234	2,272
Year 1952	3,347	3,654	3,038*	625	10,664*

In this year the Commonwealth Index to Unpublished Translations was first recorded and put into full-time use, and there was an immediate interest in it. The inquiries concerning possible translations rose considerably throughout the year. In all departments the work increased; the Document Reproductions and Loans were trebled, whilst the General Inquiries increased by 50 per cent, and the rise continued throughout the year. In less than two years Aslib had gone from 700 to 2,300 inquiries a quarter. For the first time requests for help in borrowing material became the largest single item of work, as they have remained almost ever since, and the pattern was set in 1952 of the work being fairly evenly distributed between inquiries, Loans and Document Reproductions. This pattern was to be maintained until 1956.†

The year 1953 saw a further 50 per cent increase in the total volume of work done.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,140	1,223		395	2,758
2	1,304	1,436		309	3,049
3	1,285	1,122		272	2,679
4	1,345	1,505		311	3,161
Year 1953	5,074	5,286	4,908*	1,287	16,555*

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* See footnote on p. 321.

† A yearly summary of the tables quoted in the text is to be found at the end of this report so that the trends over the ten years can be seen as a whole.

Again, each of the four groups of work showed higher figures than ever before. A 50 per cent increase was experienced in the three main groups, whilst the inquiries to the Translations Index doubled in this year. A seasonal variation in 1953 which had also occurred in 1951 was more marked—the third quarter showed a drop. This was to develop into a mid-year fall covering both the second and third quarters. It is possible that holidays reduced the amount of work sent in, or perhaps the tempo of work falls in the warmer months, but this feature has been a regular occurrence at Aslib and the spring is met with a certain feeling of relief that is not only caused by the end of the cold weather.

It was clear that this phenomenal increase in the work of Aslib—a fourfold increase in three years—could not be maintained, and 1954 saw the comparatively meagre increase (by previous years' standards) of 20 per cent.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,414	1,562		428	3,404
2	1,148	1,265		466	2,879
3	1,444	1,321		466	3,231
4	1,375	1,529		489	3,393
Year 1954	5,381	5,687	6,140*	1,849	19,057*

The seasonal variation in 1954 was more marked than ever, and began to include both middle quarters. In general the total volume of work began to level out and only the Translations Index inquiries continued to forge ahead with an increase of 50 per cent. Total figures, however, were still higher than ever before, and in five years we had come a long way—from eighteen requests a day to seventy-six a day. The staff of the Aslib Information Department had increased (not proportionately), but the fact that the department was able to cope with the work was due to the character and ability of Mrs Mack, the Information Officer, who seemed to be able to do the work of five people, supervise the work of five others and still come up smiling.

This cursory statistical review is not the place to discuss the detailed nature of the work, the way it was organized, and the different methods by which the inquiries were satisfied. In general, however, both the Loans and the General Inquiries concerned scientific work. The loans were mainly for scientific periodicals, conference reports, books, and miscellaneous papers. The inquiries were, as always, of a varied kind but dealt mainly with the different aspects of scientific research. The increase in commercial and publishing inquiries began to occur after this period.

As in 1954, 1955 saw another small increase, this time of 15 per cent.

* See footnote on p. 321.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,388	1,960		709	4,057
2	1,207	1,889		577	3,673
3	1,373	1,677		681	3,731
4	1,492	2,196		738	4,426
Year 1955	5,460	7,722	6,340*	2,705	22,227*

Naturally, as the figures rose the percentage increases were falling although the total increases were still large. It was in this year that the Loans work began to move ahead of the rest and became the largest item of work that it still is today. In fact, since 1955 the requests to borrow material have comprised about one-third of the total work received. Whilst the General Inquiries and the Document Reproduction requests were about the same, the Translations Index continued to attract increasing interest and increased by another 50 per cent.

In 1956 against reasonable expectations there was a very large increase of work and the figures were up by one-third.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,565	2,341	2,004	1,028	6,938
2	1,615	1,502	1,763	1,872	7,752
3	1,481	2,396	2,271	712	6,860
4	1,683	2,548	2,231	947	7,409
Year 1956	6,344	9,787	8,269	4,559	28,959

All sections of work shared in this increase but the figures for the Translations Index almost doubled. For the first time the Document Reproduction figures were available quarterly and thus made the table complete. Although present figures are higher than 1956, one can say that 1956 was a high-water mark for the Aslib Information Department and until 1960 the total position was comparatively unchanged.

The total work done in 1956 came to 28,959 items and it is only now, in 1960, that we expect the 30,000 mark to be passed. It was inevitable that there should

* See footnote on p. 321.

be some consolidating of the department and some overhauling of its organization so that it could cope with an amount of work that had increased sevenfold in the space of six years.

The year 1957 showed a number of changes, although the overall position was not so very different from the previous year.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,868	2,650	2,288	1,077	7,883
2	1,498	2,441	1,624	907	6,470
3	1,522	2,247	1,095	850	5,714
4	1,716	2,630	1,763	1,003	7,112
Year 1957	6,604	9,968	6,770	3,837	27,179

The seasonal variation was markedly with us and the total amount of work fell by almost 2,000. This was concentrated completely in the Document Reproduction section and the Translations Index. The fall in the Document Reproduction work was to be a permanent one and was mainly due to one overseas organization ceasing to use the Document Reproduction service. It seems that between 6,000 and 7,000 requests for photocopies or microfilms is now about the natural demand from Aslib members. This figure has been maintained since 1957, and twenty-six requests for copying each day is about the normal pattern for the Aslib Information Department. The inquiries to the Translations Index also fell considerably, but this was only a temporary phenomenon, as the following year showed.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,898	3,142	1,594	1,206	7,840
2	1,667	2,627	1,727	1,268	7,239
3	1,512	2,229	1,596	1,312	6,649
4	1,650	2,627	1,981	1,696	7,954
Year 1958	6,677	10,625	6,898	5,482	29,682

Total figures had now returned to and beyond the 1956 level except that those for Document Reproduction had found their norm and stayed there. The Translation requests jumped up again by about 50 per cent and the variations between 1956, 1957 and 1958 in this section of work seem inexplicable. If one examines, for example, the Translations figures closely over these three years,

Quarter-years	1956	1957	1958
1	1,028	1,077	1,206
2	1,872	907	1,268
3	712	850	1,312
4	947	1,003	1,696
Total:	4,559	3,837	5,482

one can see that in the second quarter of 1956 there was an enormous number of inquiries—a figure not yet equalled. In 1958, however, the figures are up for all quarters. It seems reasonable, therefore, to say that the figure for the second quarter of 1956 was abnormal and that the 1956 total was comparatively inflated. In fact, if one halved this quarterly figure the total Translations figures for 1956 would put that year back into line as part of an uninterrupted increase since 1952 in the number of requests received by the Translations Index.

For the first time, in 1958, the Loans topped the 10,000 mark, and although there is nothing statistically significant about this figure there is a pleasant round ring of '10,000 a year, 40 a day'.

Also, 1958 was even more significant, in that it saw the departure of Mrs Mack, who had seen her 'baby' grow enormously strong with an apparently insatiable appetite. As her successor, I would like to say that the greatest tribute to her work was the fact that the department continued to function well without her, as there was a considerable period when the Aslib Information Department did not have a permanent head. There is a great danger when running an Information Department dealing with this volume of work to create a system round a leader. Inasmuch as we are all fallible and transient, this is bound to break down just at a time when a breakdown can least be afforded. It has been the aim of the Aslib Information Department, and continues to be so, to systematize the work so that the department can function despite changes of heads or staff.

Despite the organizational changes, 1959 was almost a replica of 1958 with an odd figure changed here and there.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	1,570	2,554	1,799	1,351	7,274
2	1,586	3,143	1,298	1,060	7,087
3	2,101	2,302	1,402	1,392	7,197
4	1,788	2,644	1,779	1,525	7,736
Year 1959	7,045	10,643	6,278	5,328	29,294

This year, however, promises to produce the first large increase for a number of years. The total figures for the first two quarters are already 3,000 up on 1959.

Quarter-years	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1	2,389	2,791	1,596	2,222	8,998
2	1,811	3,463	1,217	1,624	8,115
half-year 1960	4,200	6,254	2,813	3,846	17,113

The increase is mainly to be found in the General Inquiry work and the Translations Index. The Translations Index, in fact, shows no signs of slackening off in interest, and it is expected that 7,000 inquiries a year will soon be a poor year for the Index. The Loans have settled down at about 10,000–11,000 a year, but there are signs that the number of General Inquiries will continue to rise. A figure of 8,000 is expected in 1960 and a large part of this increase is due to an increasing number of commercial and statistical inquiries and a great many publishing inquiries. Scientific and industrial inquiries were still by far the greater part of the work, but this broadening of the basis of the work is a feature to be welcomed.

Perhaps the most satisfactory trend throughout all these figures is the increase in the use of the Commonwealth Translations Index. The figures speak for themselves.

Year	*Trans. Total*
1952	625
1953	1,287
1954	1,849
1955	2,705
1956	4,559
1957	3,837
1958	5,482
1959	5,328
half-year 1960	3,846

In the first half of 1960 over 3,800 inquiries were received—more than in the whole of 1957. It is clear that this is going to become an increasingly important part of the work of the Aslib Information Department and already it has overtaken the work of document reproduction. One of the functions of the Aslib Information Department is to maintain this Index, receive notifications of translations, correct them, put them on to cards, type them on specially prepared stencils, and place them permanently in the Index.

The Index now contains more than 50,000 translations, and it is hoped that as the number of contributors rises and the number of notifications increases so will the number of successful replies to inquiries about translations. The success rates for 1957, 1958 and 1959 were about 9.5 per cent, 10.5 per cent and 12.5 per cent respectively. This is a very small increase but it is at least in the right direction, and it is believed that this success rate will rise much higher in the future. When it is realized that each translation located means many pounds and many hours saved in the work of translating, quite apart from the value of the article, it will be seen that the 670 successful locations of translations in 1959 were of real value to British industry. It should be pointed out that although this translation service is maintained by Aslib in the United Kingdom, it is a Commonwealth scheme with duplicates of the London index in the main Commonwealth countries—hence the name Commonwealth Index to Unpublished Translations.

This résumé has tried to show how the Aslib Information Department has moved in ten years from its small beginnings of 4,500 requests a year to over 30,000 requests a year—over 120 requests a day. Of course, there were few staff in 1951, whereas in 1960 there are eleven of them, excluding typists, but it is none the less a remarkable and satisfying achievement. On the basis of what it has already achieved the Aslib Information Department can look forward to the next ten years with confidence.

Year	*Inquiries*	*Loans*	*DR*	*Trans.*	*Total*
1951	2,259	1,255	1,038	—	4,552
1952	3,347	3,654	3,038	625	10,664
1953	5,074	5,286	4,908	1,287	16,555
1954	5,381	5,687	6,140	1,849	19,057
1955	5,460	7,722	6,340	2,705	22,227
1956	6,344	9,787	8,269	4,559	28,959
1957	6,604	9,968	6,770	3,837	27,179
1958	6,677	10,625	6,898	5,482	29,682
1959	7,045	10,643	6,278	5,328	29,294
half-year 1960	4,200	6,254	2,813	3,846	17,113

Letters to the Editor

TRANSLATORS' PROBLEMS

Dear Madam,

With reference to Mr Godfrey Sceats' letter in the August issue of *Aslib Proceedings,* the short answer to his comment is that it is recognized practice with respect to multiple words to count them as the number of their constituent parts. Thus, 'Überlebenswahrscheinlichkeiten' would count as two words: 'Überlebens' and 'Wahracheinlichkeiten'; similarly 'Eisenwasserstoffstromregulatorröhre' would count as five words: 'Eisen', 'Wasserstoff', 'Strom', 'Regulator' and 'Röhre'.

As regards the practice of counting the words of the original text rather than those of the translated version, I personally am of the opinion that this is the only equitable method of counting. Otherwise, there would be a temptation for the not over-scrupulous translator to wax verbose and use more words than are either necessary or desirable.

Another much more open question is how a translator should charge for typing—or, as is much more frequently the case, for writing in by hand, at least in part—the symbols and the like that appear in lines of text. The laying out and typing of tables is also a time-consuming task, for which it is difficult to devise an equitable basis on which to charge.

Yours faithfully,
H. B. Andrews, FRSA, FIL,
Crawford,
43 Wansunt Road,
Bexley,
Kent.

22nd August 1960.

Dear Madam,

I fail to find an issue for debate in Mr Sceats' letter on charges for translations being based on the number of words in the original language. One German word may indeed represent a phrase of several words in English. However, I know the rate for this German translation—so much per 1,000 words—I can count those words—I can calculate the cost—I am happy.

But what of the Japanese translations? As Mr Patterson reports, an increasing percentage of these are called for, particularly in the chemical field. And I am not happy—I cannot count the words!

The Institute of Linguists have issued a memo on this ('in consultation with London University and several other bodies') and I have a copy of it. But two quotations from the five brief paragraphs will be enough to show how little it helps an ordinary chap like me:

> '4. 'A man who does not know the language could not possibly decide where a word ends'.

'5. Payment would best be arranged in terms of numbers of characters translated, the phonetic symbols being overlooked. One character could be assumed to equal 1½ words or 2 words or some other arbitrary rule'.

Will somebody please give me the arbitrary rule?

Yours faithfully,

J. A. HANSON, CIBA (ARL),
Librarian,

74 Little Walden Road,
Saffron Walden, Essex.

22nd August 1960.

ASLIB REGISTER OF SPECIALIST TRANSLATORS

Dear Madam,

I wish to comment on two passages from G. M. Paterson's paper in the August 1960 issue of *Aslib Proceedings*:

> 1. 'In the case of translation from the German, this [Institute of Linguists] recommendation entails a charge of between *3 and 5 guineas* per 1,000 words. The average charge made by translators on the Aslib Register for translating technical German lies somewhere between *2 and 3 guineas* for 1,000 words.' (*My italics.*)
>
> 2. 'Two or three requests are received every week from translators wishing to join the Register and only one in three is likely to be accepted. The reason is that . . . there is a real danger of diminishing to vanishing point the prospects of employment for well-established members of the Register if too many translators with similar qualifications are admitted.'

I would comment as follows:

1. On becoming a member of the Institute of Linguists, a translator is required to subscribe to a Code of Ethics, one section of which reads:

> '4. *Maintenance of Charges.* Translators shall not charge less than the scale of minimum charges recommended by the Institute of Linguists.'

Translators on the Aslib Register evidently do charge less than the scale recommended by the Institute: presumably, they are not members of the Institute.

2. Possibly they lack the qualifications necessary for membership of the Institute, which would explain why the prospects of employment for well-established members of the Aslib Register would be jeopardized if too many translators were admitted to the Register.

Mr Paterson gives the impression that, far from being an authoritative list of competent technical translators, the Aslib Register provides under-paid and under-employed sciolists with a means of advertising.

I am sure Mr Paterson did not intend to convey this impression: I feel it should be corrected.

Yours faithfully,
L. J. Lawrence,
103 Edenfield Gardens,
Worcester Park,
Surrey.

23rd August 1960.

Mr Paterson replies:

1. A certain proportion of members of the Aslib Register are members of the Institute of Linguists. However, the figure quoted was an *average* charge of all German translators on the Register, the majority of whom are not members of the Institute of Linguists.

2. Mr Lawrence misunderstands the point about rejecting new applicants for admission to the Register. If we already have twenty people both linguistically and technically qualified to translate German texts in the field of mechanical engineering, or three people qualified to translate Danish texts in botany, then we have a sufficient number of translators to meet the anticipated demand from Aslib members for those combinations of language/subject knowledge. It is entirely false to suppose that good translators are refused admission to the Register simply to protect the employment prospects of ill-qualified translators who have somehow gained admission to the Register in earlier years. No translator has at any time gained admission to the Register without fully satisfying Aslib of her or his linguistic and technical competence, and a systematic check is made periodically of the quality of the work of each translator introduced from the Register. Membership of the Institute of Linguists is therefore, in this case, not a relevant consideration.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the library.

Books and Pamphlets

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John Benjamin Dancer: instrument maker, optician, and the originator of microphotography. London, Library Association, 1960. 19 pp. illus. (Library Association, Reference Special and Information Section, North-Western Group Occasional Paper no. 2.) 4*s*.

BRITISH CATALOGUE OF MUSIC
Classification; compiled for the Council of the British National Bibliography Ltd by E. J. Coates. London, Council of the British National Bibliography, 1960. xii, 56 pp. 21*s*.

BRITISH STANDARDS INSTITUTION
Glossary of paper, stationery and allied terms. London, B.S.I., 1960. 31 pp. (B.S. 3203 : 1960.) 7*s* 6*d*.

BRITISH STANDARDS INSTITUTION
Glossary of terms used in telecommunication (including radio) and electronics. 3rd revision. London, the Institution, 1960. 351 pp. diagrs., tables. (B.S. 204 : 1960.) 35*s*.

CHEMICAL SOCIETY
Handbook for Chemical Society authors. London, the Society, 1960. vii, 224 pp. 21*s* (6*s* to Fellows).

COLUMBIA UNIVERSITY. Bureau of Applied Social Research
Review of studies in the flow of information among scientists; prepared for the National Science Foundation. New York, the University, 1960. 2v. [2], v, 62; [2], ii, 48 pp. (Vol. 1: Text; Vol. 2: Tables.)

EATON, THELMA, *and* STROUT, DONALD E., *editors*
The role of classification in the modern American library: papers presented at an Institute conducted by the Illinois Graduate School of Library Science, November 1–4, 1959. Champaign, Illinois, The Illini Union Bookstore, 1959. vii, 136 pp.

*GUIDE to American directories, 4th ed., 1960: a guide to the major business directories of the United States, covering all industrial, professional and mercantile categories. New York, B. Klein & Co., 1960. x, 424 pp. $20.

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Printing in London from 1476 to modern times: competitive practice and technical invention in the trade of book and Bible printing, periodical production, jobbing, etc. London, Allen and Unwin, 1960. 224 pp. illus. 28*s*.

HARDMAN, H., *and* COLE, E. J.
Paper-making practice. Manchester, Manchester University Press, 1960. xi, 334 pp. diagrs., bibliog. 45*s*.

HARRISON, K. C.
First steps in librarianship: a student's guide. 2nd ed. fully revised and re-written. London, Grafton, 1960. 243 pp. 21*s*.

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Catalogue of the lending library, 1959. London, the Institution, [1960]. 8, 223 pp. 3*s* 6*d*.

INTERNATIONAL MUSICOLOGICAL SOCIETY, *and* INTERNATIONAL ASSOCIATION OF MUSIC LIBRARIES
Répertoire international des sources musicales (international inventory of musical sources). Recueils imprimés XVIe–XVIIe siècles: 1, liste chronologique. München–Duisburg, G. Henle Verlag; London, Novello, 1960. 639 pp. 136*s* (subscription price 120*s*).

JARRETT, JAMES
Printing style for authors, compositors and readers. London, Allen and Unwin, 1960. 124 pp. 15*s*.

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Subject guide to books. Vol. 2: Biography, family history, heraldry, genealogy, etc.; general editor, Lionel R. McColvin, associate editors, K. R. McColvin, E. W. Padwick. London, J. Clarke, 1960. vi, 279 pp. 50*s*.

*LIBRARY ASSOCIATION
Year book, 1960. London, the Association, 1960. ixxi, 493 pp. 15*s*.

LIEBICH, WERNER
Anwendüngsmöglichkeiten der Vertikalablage: ein Beitrag zum Problem der Bearbeitung, Aufbewahrung und Erschliessung ungebundener und broschierter Bibliotheksmaterialen. Cologne, Greven Verlag, 1959. 90 pp. illus., bibliog.

LYBRAND, ROSS BROS and MONTGOMERY. Management Services Research and Consulting Division
Electronic data processing: subject bibliography of periodical literature, 1959. New York, Lybrand, Ross Bros & Montgomery, 1960. [3], 49 pp. gr.

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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

GERMAN TRANSLATIONS. Technical literature on all engineering subjects translated into German by experienced native translators and copywriters. BRUNTON TRANSLATIONS, Charlotten-Strasse 47, Düsseldorf. Tel.: 13698.

JAPANESE SCIENTIFIC and TECHNICAL translations and abstracts by bi-lingual, Japanese-born translator. D. Jackson, 24 Lockington Road, London, S.W.8. Tel.: Macaulay 2950.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC (ENG.), FIL, 140 Wightman Road, London, N.8. Tel. Stamford Hill 8564.

TURKISH, FRENCH, and ITALIAN translations. All subjects. F. P. Scott, 4 Uphill Grove, Mill Hill, London, N.W.6. Mill Hill 3364.

WILFRED E. GOODAY, ARSM, DIC, MIMM, FIL. Technical translation from French and Roumanian. 161 Rivermead Court, London, S.W.6. Renown 1912.

MEMBERS' ADVERTISEMENTS

Appointments vacant

THE BRITISH BAKING INDUSTRIES RESEARCH ASSOCIATION require an assistant, preferably a graduate, in the Information Department, primarily to deal with technical inquiries and to see publications through the press. A reading knowledge of foreign languages, especially German, would be useful. Superannuation scheme; five-day week. Salary according to age, qualifications, and experience. Applications, including the names of two persons to whom reference may be made, should be sent as soon as possible to the Director of Research, Baking Industries Research Station, Chorleywood, Herts.

JUNIOR clerk/typist (15/17) required for technical library, COATES BROS AND CO., Easton Street, Rosebery Avenue, London, W.C.1. Preferably of G.C.E. standard or equivalent in English. Five-day week. Canteen. Please telephone Miss Moody for appointment (Terminus 2810).

LIBRARIAN required to organize and develop small architectural technical library in London, S.W.1. A working knowledge of UDC is essential. Please write giving details of age, experience, and salary required to Box 760, Aslib.

WESTINGHOUSE BRAKE & SIGNAL CO. (Rectifier Division) have a vacancy for an ASSISTANT INFORMATION OFFICER (Female) at their headquarters, 84 York Way, King's Cross, London, N.1. University education desirable; knowledge of German an advantage but not essential; typewriting essential. Attractive salary offered. Applications to Reference P.G.F. at above address.

Wanted

Journal of the American Medical Association, vol. 172, nos 16 and 18. The Andersonian Library, The Royal College of Science and Technology, George Street, Glasgow.

Liquid metals handbook, 2nd ed. $1. (US Atomic Energy Commission, Washington); *Zavodskaya laboratoriva,* 1956, no. 12; wanted by the British Iron and Steel Research Association, Hoyle Street, Sheffield 3.

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 October 1960 Number 10

ASLIB CALENDAR

OCTOBER

THURSDAY 20th. Winter meeting. See paragraph below.
Engineering Group visit to Aslib.

NOVEMBER

TUESDAY 1st. Course in handling Soviet and East European literature commences. See paragraph below.

FRIDAY 4th – SUNDAY 6th. Northern Branch Conference in York. See paragraph below.

WEDNESDAY 9th. Fuel and Power Group visit to Messrs Webb, Son, & Company Limited.

WEDNESDAY 23rd. Winter meeting. See paragraph below.

WEDNESDAY 30th. Electronics Group meeting in London.

DECEMBER

TUESDAY 6th. Winter meeting. See paragraph below.

1961

FEBRUARY

FRIDAY 3rd. Scottish Branch Annual General Meeting at East Kilbride. See paragraph below.

MARCH

WEDNESDAY 29th. Midlands Branch Annual General Meeting.

APRIL

FRIDAY 21st – SUNDAY 23rd. Electronics Group annual conference at Ashridge College, Berkhamsted.

SEPTEMBER

WEDNESDAY 6th – SATURDAY 16th. FID Conference in London.

Winter Meetings

Three winter meetings are announced, two of which take place at Aslib. On Thursday 20th October at 5.30 p.m. Mr A. H. Holloway, MSC, FRIC, FIINFSC, Head of Admiralty Centre for Scientific Information and Liaison, will be the speaker on 'The cost of co-operation; some experiences in co-operative information work'. Tea will be served at 5 p.m.

On Wednesday 23rd November at 6 p.m. the members of the Conference and Meetings Committee will form a 'Brains Trust on Special Librarianship'. Questions will be welcomed in advance and should be sent to the Director. Tea at 5.30.

On Tuesday 6th December at 2.30 p.m. a visit has been arranged to the Department of Scientific and Industrial Research, Lending Library Unit, where Dr D. J. Urquhart will give a brief descriptive talk. Tea will be provided and after the visit there will be an opportunity for questions.

Members who wish to attend any or all of these meetings are asked to inform Aslib as soon as possible.

Evening Course on handling Russian Literature

An evening course on handling Soviet and East European literature will take place at Aslib on Tuesday evenings at 6.30 to 8 p.m. from 1st November to 13th December inclusive. The lecturer will once more be Mr Anthony Thompson, MA, FLA, Royal Society of Arts Diploma in Advanced Russian and Aslib delegate to libraries in the USSR in January this year. Students who take the course can expect to become familiar with the Russian alphabet and the most important transliteration schemes, and be able to identify the major East European languages. The emphasis will be on Russian and other East European languages will be dealt with more or less briefly according to their importance. The fee for the course will be 5 guineas.

Northern Branch

Production of technical books and papers will be the theme of the Branch conference to be held from Friday 4th to Sunday 6th November in the Guildhall, York. Conference papers will be given under the following titles: 'Technical authorship' by Dr J. L. Molliet, BA, ICI Dyestuffs Division, author of *Surface activity: the physical chemistry, technical applications, and chemicals constitution of synthetic surface-active agents*; 'Technical publishing' by Mr A. M. Wood, the Clarendon Press, Oxford; 'Technical bookselling' by Mr Ernest Hochland, Haigh & Hochland Ltd, Manchester; 'Technical indexing' by Mr F. Newby, MIINFSC, Patents Officer, Hardman & Holden Ltd, Manchester; and 'The growing problems of book selection and purchase in public libraries' by Mr O. S. Tomlinson, FLA, City Librarian, York.

Scottish Branch

Plans are well advanced for the Annual General Meeting and conference to be held on Friday 3rd February 1961 at the National Engineering Laboratory, East Kilbride. The business meeting will open at 10.30 a.m., this time having been chosen in order to allow members who have to travel some distance to be present. The remainder of the morning will probably be devoted to a paper on information retrieval. In the afternoon, members will have an opportunity to visit sections of the Laboratory, including the new library building and the information section. Meals will be served within the Laboratory grounds. There are frequent bus services from Glasgow to the National Engineering Laboratory. Detailed routing instructions will be supplied later. Visitors wishing to stay overnight for the conference are advised to book early for accommodation in Glasgow or at the Stuart Hotel, East Kilbride.

New Address of FID

The General Secretariat of the International Federation for Documentation (FID) has moved to 7 Hofweg, The Hague, Netherlands. The telephone number is now The Hague 18081.

Course on Record Library Work

The University of London Department of Extra-Mural Studies, in association with the British Institute of Recorded Sound, has announced a course of ten lectures on 'The Record Library and its Problems', to be held at 8 p.m. on Wednesdays at The British Institute of Recorded Sound, 38 Russell Square, London, W.C.1. Further details can be obtained direct from the Institute.

AERE New Library

The Atomic Energy Research Establishment at Harwell has a new Main Library and Document Reproduction Section in a new two-storey building which was opened officially on 7th September. The ground-floor plan is in the form of a letter H, one of the main verticals being occupied by library stacks and the remainder by the Document Reproduction Section. The whole of the first floor is devoted to the library, including the information office, translations section, catalogue hall, reading rooms, and offices. The library stock comprises some 20,000 volumes of books and periodicals, 250,000 copies of technical reports, 50,000 microcards, and 27,000 pamphlets, and is claimed to include the largest collection of atomic energy literature in the world. Reference and loan services are available to the staff of AERE, Harwell, and of the Rutherford High Energy Laboratory of the National Institute for Research in Nuclear Science and to the Radiobiological Unit of the Medical Research Council.

The Cole Library

Reading University Library has acquired the scientific library of the late Professor F. J. Cole, FRS, who was Professor of Zoology in the University from 1907 to 1939. The library consists of some 8,000 volumes covering the whole field of the history of zoology and it forms a complement to the Cole Museum of Zoology, already housed in the Zoology Department of the University.

International Conference on Machine Translation

The Autonomics Division of the National Physical Laboratory will convene an International Conference on Machine Translation of Languages and Applied Language Analyses, to be held from Tuesday 5th to Friday 8th September

1961 at the National Physical Laboratory, Teddington, Middlesex. The official languages of the conference will be English, French, and Russian.

Written contributions are invited from workers engaged in research into machine translation of language or concerned with syntactic or semantic analysis of languages, where such analysis may facilitate machine translation. Three copies of each paper submitted, together with three copies of an abstract of each, should reach the Chairman of the papers subcommittee of the appropriate area by 31st January 1961. Papers must be typed in one of the conference languages in double-spaced lines on one side of quarto sheets. Only roman or cyrillic characters may be used in the text of the papers, other characters may be used in tables. Illustration should be in black line drawing only and on separate sheets.

Chairmen of papers subcommittees:

Area	*Chairman*
USSR and Eastern Europe	Professor D. Yu. Panov, pl. Vosstanija 1, Kw 213, Moscow, USSR.
USA	Professor L. Dostert, Georgetown University, 1715 Massachusetts Avenue, Washington 6, DC, USA.
All other countries	Dr A. M. Uttley, Superintendent, Autonomics Division, National Physical Laboratory, Teddington, Middlesex, England.

Nuclear Engineering Abstracts

The first issue has been received of a new abstracting journal. This is volume 1 number 1, dated July 1960 of *Nuclear engineering abstracts*, a Silver End documentary publication which is planned to appear quarterly at an annual subscription of 6 guineas or $18.50. It is intended for engineers engaged in nuclear work, scientists employing nuclear instruments or machines, manufacturers and operators of nuclear plant, and industrialists interested in the field of nuclear engineering. In the first issue more than 200 articles are abstracted from a total of some ninety journals. These are indexed by subject in thirty-eight groups. Alphabetical author index is included and an alphabetical list of publications abstracted, giving the names and addresses of publishers. *Nuclear engineering abstracts* is published by Silver End Documentary Publications Ltd, 9–11 Tottenham Street, London, W.1.

Electronics Weekly

A new industrial weekly newspaper made its first appearance last month under the title *Electronics weekly*. Its format is similar to that of some of the well-known daily and evening newspapers, with a six-column page, banner headlines, half-tone illustrations, and trade and classified advertisements. In the first issue, of twenty-four pages, the accent is on communication; with articles on microwave tubes, safety systems for aircraft, computers and computer services, and fish-finding, and news of events and personalities in the field of electronics. *Electronics weekly* is published every Wednesday, price 4*d*, by Heywood & Company Ltd, Drury House, Russell Street, London, W.C.2.

Current Legal Bibliography

The Harvard Law School Library has announced publication of a new bibliographic journal to provide, on a world-wide basis, a survey of significant writing in all fields of law. The 'nine monthly issues' of *Current legal bibliography* to appear during the academic year will comprise approximately 4,000 entries, and will form a comprehensive list of monographs, journal articles, and the contents of collected works of all types received by the library. It is intended also to publish an annual volume entitled *Annual legal bibliography* which will cumulate the entries in *Current legal bibliography* and include references to books and journal articles not previously reported, to an expected total of some 10,000 entries. Both these publications are available by subscription to Harvard Law School Library, Current Legal Bibliography, Cambridge 38, Massachusetts, U.S.A., at $3 (21*s* 6*d* approx.) for *Current legal bibliography* and $14 (£5 0*s* 4*d* approx.) for *Annual legal bibliography*, or a combined subscription of $15 (£5 7*s* 6*d* approx.) for both services.

American Translators Association

It is reported that a national professional society for translators and interpreters has been established in New York under the title American Translators Association (ATA). Its main purposes are to improve the quality of translations, to formulate and maintain high professional standards, and to support professional training for translators. The first president of ATA is Dr Alexander Gode, chief of the Interlingua Division of Science Service, New York. Membership is open to all persons actively engaged in translating or interpreting. Inquiries should be addressed to P.O. Box 489, Madison Square Station, New York 10, NY, USA.

ASLIB RESEARCH PROGRAMME

C. W. HANSON, BSC, FIINFSC
Head of Research Department

35th Annual Conference, Brighton, September 1960

WHEN the Research Department came into existence early in 1959, one major project was already in progress: the investigation of indexing systems, which will be described to you by Mr Cleverdon; and raw material had been collected by Dr Campbell for a survey of information/library units. We shall discuss the Survey also later in the conference.

In addition, the Department inherited from an earlier research committee a carefully considered list of sixty-five proposals for research, classified in terms of desirability, feasibility, and manpower required. These proposals formed valuable raw material for use in formulating a research programme. They were supplemented by suggestions put forward by individual Aslib members and by numerous published recommendations such as those contained in the paper prepared by Coblans[1] for Unesco.

All these proposals were studied in relation to current conditions, the likely resources of the Department, and to researches known to be in progress elsewhere. In developing a draft programme for consideration by the newly elected Research Committee, two assumptions were made for the time being: the first was that it was better to have information than not to have it; the second, that written information, as compared with oral, was our central interest. Following from the first assumption, we did not at that stage plan to try to measure the *value* of information, or the penalty paid for not having and using it. A yardstick by which we could measure the cash value of information would be an achievement of great practical importance, but we have not so far been able to design an investigation which we think likely to yield meaningful results. The Chairman of the Research Committee, among others, is devoting further thought to the matter, which we shall reconsider as soon as we are satisfied that the right techniques have been developed.

Our second assumption, leading to concentration upon the written word, does not mean that we are unaware of the large part played by oral communication. The recent work of Halbert and Ackoff[2] has strikingly confirmed that chemists, at least, prefer oral to written communication: listening and talking to reading and writing. But Aslib has always been concerned primarily with written communication, and most of the problems of most of its members arise from it—its volume, growth, and form; and for this reason alone it seemed wise to concentrate our efforts here for the time being.

The field to be explored was surveyed, and factors affecting the flow of information from source to ultimate user were grouped within nine main areas (see Appendix, A1–9). In each of these areas there were found to be many gaps in our knowledge of:

a. existing practice, e.g. the cost of inter-library borrowing;
b. the effects of changing practice, e.g. the growth of report literature;
c. the potentialities of innovations, e.g. microcard as a medium of primary publication.

In selecting projects from these areas to form a draft programme, we employed the following criteria:

a. there should be convincing evidence of the need for an investigation;
b. there should be adequate grounds for believing that an investigation would yield meaningful results, which could be followed by action;
c. the investigation should be within the power of Aslib to carry out effectively;
d. it should not, except deliberately and in special circumstances, duplicate work known to be in progress elsewhere;
e. some staff time should be left free for minor *ad hoc* investigations and advisory work.

The programme finally evolved and adopted, after discussion and amendment by the Research Committee, comprises fifteen items listed in skeleton form in Appendix, B1–15. These form a mixed bag of major and minor items, some related to detailed library techniques, others to broader issues of national importance. This is deliberate, and I think wise, because we want on the one hand to carry out work the results of which will have a national impact, and on the other to provide data which will be immediately useful to members in their day-to-day work. There are no items concerned directly with machine storage and retrieval, or with mechanical translation. This is because much work on these subjects is already in progress elsewhere, and because until the resources and experience of the Department have grown we should be unlikely to be able to make substantial contributions to knowledge in these complex fields.

The depth of the work envisaged as appropriate to the listed items varies considerably. The word 'research' commonly implies observation or measurement under controlled conditions, the formulation of hypotheses, and the testing of the truth of these hypotheses. We anticipate that much of our work, at this early stage, will necessarily be concerned with the first, fact-finding and descriptive operations. Most of the work which we have undertaken so far—excluding the indexing research—has been of this type. Much of it involves asking our members to co-operate by providing data. The extent to which they have done so has been most encouraging.

The first major project to be started was B10, the investigation of inter-library borrowing with special reference to costs. Reasons for giving this priority included the rapid development of photocopying, which is an alternative to borrowing, and the forthcoming establishment of the National Lending Library for Science and Technology, which may alter the pattern of inter-library borrowing. This investigation is now nearing completion. Detailed data relating to about two thousand borrowing transactions has been collected and tabulated, and analysis of the results is in progress. I cannot, of course, anticipate these results; but I can say with reasonable certainty that the time spent by the staff of the borrowing library in connection with borrowing items from outside libraries averages about twenty minutes per item. This is of course only one of the many factors, all of which are being taken into consideration, which enter into the costs of inter-library borrowing.

Second priority was given to B5, an investigation of the translation problem as it affects English-speaking scientists and technologists. Work on this was started early this summer by Mrs Phillips. Our basic aim is to quantify the problem and to assess the potentialities of each of four methods of making foreign language literature effectively available. The four methods are:

co-operative schemes for sharing translations of individual papers;
cover-to-cover translations of complete issues of foreign periodicals;
teaching scientists to read papers on their own subjects in foreign languages;
machine translations.

Third priority has been given to B1, an investigation of semi-published report literature. Preliminary plans have been made, and serious work should be started by the end of the year. The investigation is designed to reveal to what extent the information contained in these reports *a*, is abstracted; *b*, is later incorporated in open publications; *c*, reaches those to whom it could be useful.

We anticipate and hope that we shall always be in a position to carry out some minor investigations to meet the day-to-day needs of members as they arise. Two such investigations have been completed and published during the past year. The first concerned the delays experienced by special libraries in getting their sets of periodicals bound[3], and the second the lack of indexes in reports of conferences and symposia.[4]

In addition to undertaking its own investigations, the Research Department has other functions: it must keep itself well informed of research in information and library work carried out elsewhere and be able to interpret the results for the benefit of members. It must stimulate interest in research, encourage and help other organizations and individuals in their investigations, and generally act as a co-ordinating centre. In each of these ways, on a modest scale, the existence of the Research Department is beginning to yield results.

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APPENDIX

A. THE FIELD TO BE EXPLORED

A1. *Personal communication*—verbal, formal and informal; links between people; directories of people and organizations; etc.

A2. *Publications, primary*—volume, growth, form, sub-division, language; printing methods; micropublication; etc.

A3. *Publications, secondary*—abstracts, reviews, compendia, indexes, book lists, bibliographies, translations, etc.

A4. *Flow of primary and secondary publications direct to user*—distribution by purchase, subscription; buying habits; costs, etc.

A5. *Flow of primary and secondary publications to libraries*—structure of library system; library finance; etc.

A6. *Internal operations of libraries*—selection, storage, retrieval, arrangement, handling, classification, cataloguing, binding, discarding; translations, reproduction, copyright, etc.

A7. *Links between libraries*—co-operative buying, inter-library lending, union lists of holdings, methods of transmission, etc.

A8. *Links between libraries and users*—personal usage, lending services; reference, inquiry, scanning, and searching services; publications, etc.

A9. *User needs and habits*—time for reading, reading speed, nature of needs, pattern of demand by subject and type of user, etc.; needs of small firms.

B. PROPOSED SUBJECTS FOR INVESTIGATION DURING A FIVE-YEAR PERIOD

Area A2. *Primary publication*

B1. Semi-published report literature.
The extent to which information contained in reports *a*, is later incorporated in open publications; *b*, is abstracted in abstracting periodicals; *c*, reaches those to whom it might be useful.

B2. Reports of conferences, congresses, and symposia.
The FID, under contract with Unesco, are investigating this field. Aslib is in contact with FID and will work in conjunction with it.

B3. University theses.
The extent to which information contained in theses is later incorporated in open publications, and the adequacy of existing arrangements for making thesis material effectively available.

B4. Primary publication on microcards.
Assessment of potentialities.

Areas A2 *and* A3. *Primary and secondary publications*

B5. Foreign language scientific and technical literature.
Assessment of the size of the translation problem as it affects English-speaking readers. Assessment of the potentialities of: *a*, co-operative schemes; *b*, cover-to-cover translations; *c*, teaching scientists to read foreign literature on their own subjects; *d*, mechanical translation. In progress.

Area A6. *Internal operation of libraries*

B6. Comparative study of indexing systems.
UDC, alphabetical subject, co-ordinate, faceted. In progress at Cranfield.

B7. Internal indexes and published indexes.
The circumstances in which reliance upon published indexes and abstracts is an effective and economical alternative to internally compiled indexes.

B8. Comparative study of loans-issuing systems.
Study of basic needs in particular situations, and practical trials.

B9. Binding periodicals.
Study of the factors affecting decisions to bind or not to bind periodicals (e.g. space-saving, physical life of unbound issues, useful life in relation to age, cost of binding and of shelving) leading to the development of a guide to economical practice.

Area A7. *Links between libraries*

B10. Inter-library borrowing and lending.
With special reference to costs. In progress.

B11. Facsimile transmission of documents.
Assessment of potentialities and the specification of requirements.

Area A8. *Links between libraries and users*

B12. Ratio of information/library staff to number of users.
The optimum extent, range, and depth of services which can be provided by an information/library unit to a research team; the size of unit required to provide these services to teams of various sizes; assessment of the advantages of relieving experimental workers of all work which could be done by an information/library unit.

B13. Circulation of contents pages of periodicals.
Assessment of potentialities and study of methods.

B14. Effects of different periods of loan.
Effects of shorter and longer periods of loan than the commonly adopted two weeks on: *a*, the borrower; *b*, other users of the library; *c*, need for duplicates.

Area A9. *User needs and habits*

B15. Selection and testing of model sets of reference books.
Study of the use made of small sets of specially selected reference books supplied to small firms which have hitherto possessed no books and used no libraries.

CHAIRMAN'S INTRODUCTION

Opening the meeting, the Chairman, MR LESLIE WILSON, recalled that he had first suggested publicly in 1954 that Aslib had a duty to undertake and sponsor research into various aspects of information work. The response had then been, at best, lukewarm. Meanwhile, opinion had changed considerably. The National Science Foundation of the United States had made grants totalling £16,000 to Aslib for one research project, and the DSIR had gone so far as to make the establishment of a research programme a condition of the enhanced terms of grant offered for the current five-year period. It had accordingly been decided to establish a research department at Aslib and Mr Hanson had been appointed head of the department early in 1959. Since then, two or three minor investigations had been completed, two major projects had been started in addition to the work at Cranfield for which the National Science Foundation grants had been made, and a long-term programme of research had been drawn up. This programme was by no means sacrosanct and one of the purposes of the present session was to give members an opportunity of influencing its development.

DISCUSSION

MR AGARD EVANS (Ministry of Works) said that while those in charge of libraries welcomed the results of research undertaken, most of them were too busy keeping their own libraries going to be able to carry out useful research themselves.

MR R. SEWELL (United Steel Companies Ltd) said that he had been surprised to find that engineers and production staff were interested in university theses and further investigation into the use of this material might be valuable. He thought that Mr Hanson's time of twenty minutes per item for inter-library borrowing could be considerably reduced by use of routine methods. Finally, he asked in what form reports of Aslib research would be published.

Mr Hanson pointed out that the time of twenty minutes referred to was an overall average of times which ranged from five minutes to two hours. It was easy to forget telephone calls and unsuccessful attempts to locate information.

Mr Wilson said that short statements about Aslib research work would be published in *Aslib proceedings* but more lengthy reports of completed projects would probably be issued as separate publications and priced.

MR JACK BIRD (Morgan Bros (Publishers) Ltd) asked if the investigation into the cost of borrowing would be followed by an inquiry into the comparative costs of other methods of acquiring material, e.g. by purchase of originals or of photocopies.

MR J. G. HALL (Esso Research Ltd) asked if research under item B10 would include investigation of requests which were passed on before all possible checking and processing had been done locally.

Mr Hanson replied that the present investigation would show the comparative cost of photocopying and throw light on delays and causes of delays in borrowing. The cost to the lender should also be allowed for. An investigation into the cost of purchase would be considered.

MISS M. BISHOP (British Oxygen Research and Development Ltd) said that in her experience it was little use supplying material in microfilm form because it was too tiring to read. She hoped that improvements to microfilm and reading machines, or the development of more acceptable substitutes, would be studied.

MR W. E. CLASON (N. V. Philips Gloeilampen Fabrieken) said he hoped that Aslib would co-operate with other organizations in the standardization of literature and asked that Aslib investigate ways of distinguishing between first- and second-hand literature.

MR J. FARRADANE (Tate and Lyle) said that when the Aslib Research Department had been set up he had expected a programme of research into the effective use of information, work which would lead to the establishment of a new science of documentation. The programme which Mr Hanson had outlined was mere chicken-feed.

Mr Hanson agreed that there was a lot lacking in the present programme. The translation of the broad conception of a research programme into precisely formulated investigations was a very big undertaking. Aslib was progressing slowly toward formulation; meanwhile it was unwise to ignore the 'chicken-feed'. It was necessary to provide immediate help as well as to advance toward future major results, and a balance had to be attempted between long-term projects calculated to produce major results and the 'chicken-feed' which could be of immediate value.

USE OF PUNCHED CARDS IN PREPARATION OF LISTS OF PERIODICALS

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35th Annual Conference, Brighton, 29th September 1960

INTRODUCTION

SCIENTIFIC and technical periodicals and other serial publications are purchased by the Main Library at Harwell for its own collections and for those of twenty-two divisional libraries. Subscriptions are placed through a bookseller for all serials other than Government publications which are purchased direct from HMSO. In addition, a number of journals are presented to the library from various sources. All serial publications are recorded in the library catalogues and individual copies are checked in by the Main Library using conventional visible index equipment. For quick reference a strip index of holdings and locations is kept in the Reading Room of the library.

Just over 1,400 titles are taken by the libraries, representing about 3,200 copies, and the task of providing Divisions and Outstations with complete and up-to-date information on serial holdings has always proved extremely difficult when conventional listing methods are used. In addition, periodical lists of various kinds are required by the Main Library from time to time for record purposes, and it has been found useful to supply the bookseller and HMSO with a check list of journals for which subscriptions must be placed for the ensuing year.

Table 1 shows the various kinds of lists which need to be produced, their coverage, frequency, and the number of copies required of each. The 'holdings' list gives the holdings of the Main Library or, if the journal is not taken in the Main Library, of that Division which has the longest run. It includes entries for journals not taken currently but of which back numbers are worth retaining in the library, but it does not contain entries for certain serials such as timetables and directories although the latter are included in the 'periodicals purchased' list. The holdings list is widely distributed within the Establishment and is also sent to other Authority libraries and to external organizations.

Lists 2, 3, 4, and 6 are required to furnish Divisional libraries with such information as they need for ordering and maintaining their own periodicals, and copies of the first two are also sent to the main agent and HMSO respectively for use as check lists. The remainder are used for record and administrative purposes, although the last has an obvious information value. The layout of lists 1, 2, and 4 is shown in the appendix.

LIST	Information required	Entries	Frequency	Copies
1. *Periodical holdings*	Title, holdings class no. or divisional location	1350	Annual	1000
2. *Periodicals purchased through main agent*	Title, price, no. of copies, location	900	Annual	100
3. *Periodicals purchased from HMSO*	Title, price, no. of copies, location	60	Annual	100
4. *Periodicals presented*	Title, source, no. of copies, location	400	Annual	100
5. *Periodicals received on exchange. (Extract from list* 4)	Title, source, no. of copies, location	60	Annual	10
6. *Divisional lists (One for each division)*	Title, price, no. of copies	Varies	When required	5
7. *List of bound journals*	Title	250	Annual	10
8. *List of periodicals by subject*	Class number, title	1350	When required	200

TABLE I

CHOICE OF PUNCHED-CARD SYSTEM

By conventional methods each of these lists had to be prepared separately from original records, itself a time-consuming process, and it was impracticable with the effort available to keep them fully up to date. It was thought that photographic reproduction of the strip index might provide an answer but this did not give all the information required and, in any case, no simple way of selecting only the information required for a particular list could be found. It was noted that Massachusetts Institute of Technology had found this method troublesome and it was decided not to proceed with it.[1] On the other hand the experience of both MIT and DSIR in the use of punched cards seemed to indicate that this method was worth considering and the co-operation of the Computer Group of the Theoretical Physics Division at Harwell was sought.

It was apparent that once the task of compiling the basic information in a suitable form was completed, the use of punched cards seemed to offer a number of advantages. No typing effort was involved once the cards had been punched and this was an important factor in reaching a decision. The machine speeds for sorting, collating, and tabulating are such that a master copy, suitable for reproduction, of a list of nine hundred titles showing location of all copies could easily be produced in one day, thus ensuring that the lists, when reproduced and circulated, were as up-to-date as possible. Once the punched cards had been verified no proof checking was necessary and the need for keeping separate records for each variety of list was abolished.

METHOD OF COMPILATION

The basic information was prepared from available records in column form as shown in Table II. This was probably the most arduous part of the exercise, requiring over two hundred man-hours of work. Information in columns 2, 3, 4, 5, 6, 7, 8, and 9 must be printed out selectively according to the type of list being compiled. For example, columns 2, 3 and 4 are used to print the holdings list, columns 2, 6, 7, 8, and 9 to print the list of journals purchased and so on. Information in columns 4, 5, and 9 is also used as a selection medium and that in columns 10 and 11 for selection only.

This is more information than could be handled by a single sequence of eighty-column punched cards, although the amount of information to be printed out on any one type of list was well within the capacity of the ICT 901 tabulator which has forty characters at each of one hundred printing positions.

1	2	3	4	5	6	7	8	9	10	11
Serial number	Title	Holdings	Class no.	Source	Cost per copy	Total no. of copies	Number of copies in each location	Location	Bound	Country of origin

TABLE II

It was decided to run two sequences of cards, one for titles and one for the information about each title, and to use a set of number codes to control sorting and printing. Examples of title and information cards are shown in Figs. 1 and 2, the allocation of columns being as follows:

Title card

Columns	1– 6	Serial number
	7–41	Title
	42–80	Blank

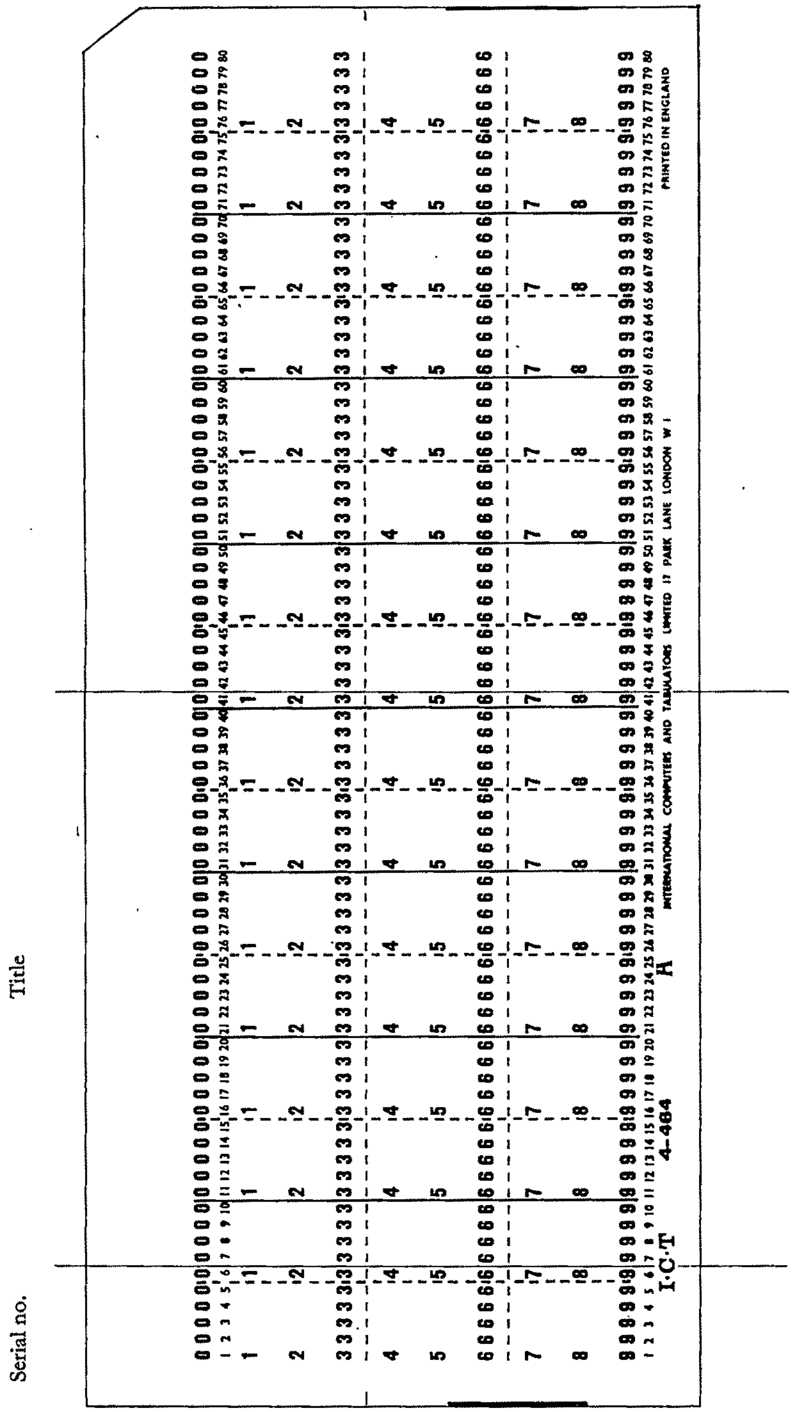
Serial no.
Title
I·C·T
4-484
H
INTERNATIONAL COMPUTERS AND TABULATORS LIMITED 17 PARK LANE LONDON W 1
PRINTED IN ENGLAND

FIG. 1. *Title card*

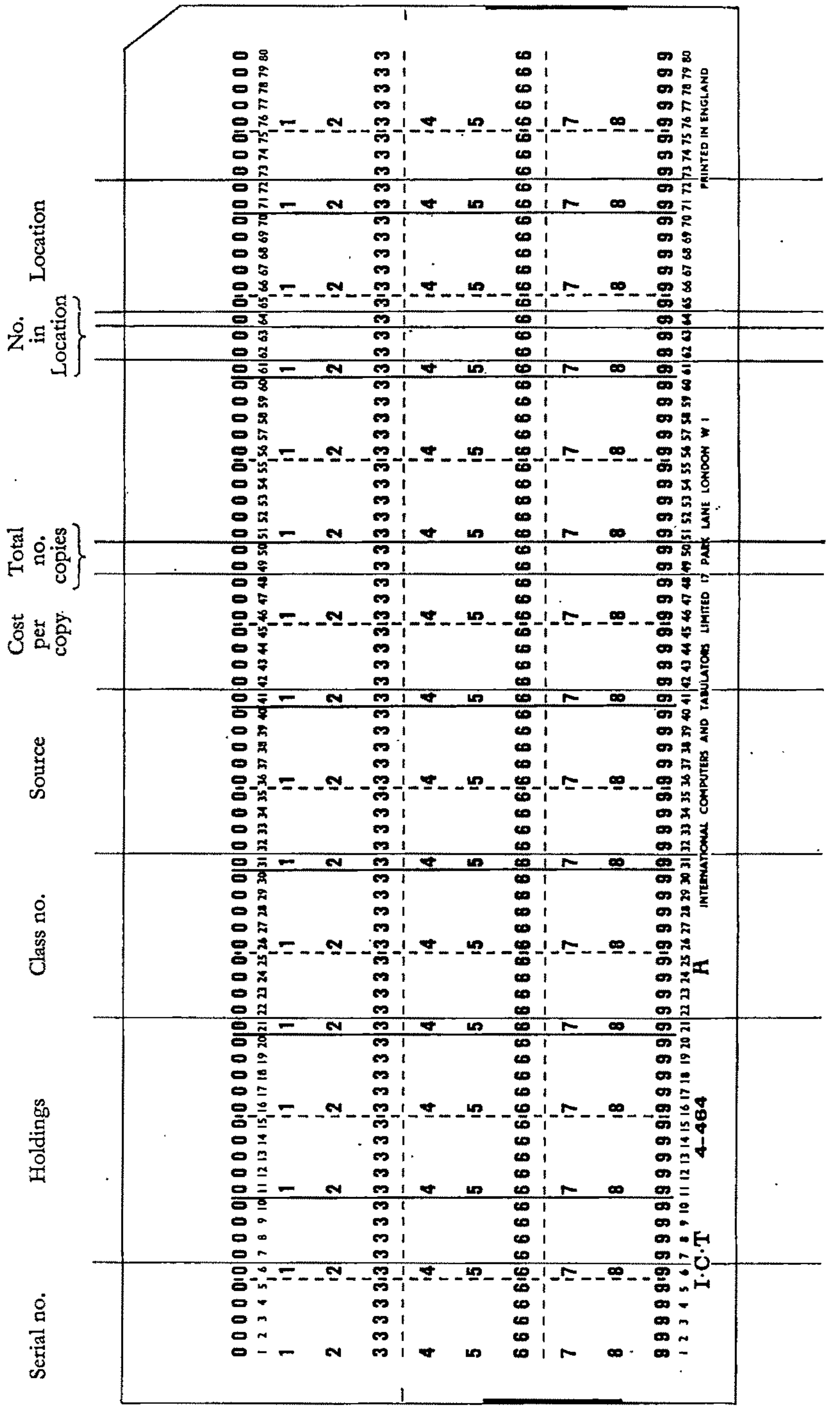

FIG. 2. *Information card*

Information card

Columns	
1–6	Serial number
7–21	Holdings
22–31	Class number
32–41	Source
42–48	Cost per copy
49–50	Total no. of copies
51–58	Blank
59	Code indicating title to be omitted from list of periodicals purchased or presented
60–61	Blank
62–63	No. of copies in each location
64	Blank
65–72	Location
73	Code indicating title or information card
74	Code indicating type of list (i.e. purchased, presented, etc.)
75	Code indicating bound or not bound
76–79	Country of origin. * added indicates translated version
80	Blank

The serial numbers are common to both sets of cards and enable titles and information to be collated for any particular listing. The first four columns give the serial number allocated to each title on the original listing and the fifth column allows for insertion of new entries. If the title requires more than one card the additional cards are designated by numbers in the sixth column. Similarly each location requires an additional card in the information pack and these too are designated by numbers in the sixth column.

Cross references from one form of title to another were included by using columns 7–40 of the information card to print the 'see' part of the reference. Each of these cards is coded in column 59 so that they will be selected only for the holdings list and not for the purchased and presented lists.

Shelf or classification numbers presented something of a problem. There are two sequences in the library: abstracting and bibliographical serials, which are classified at 016 colonned to the UDC number for the subject, and other periodicals classified at 05: . . . . For simplicity it was decided to omit the 05 from the latter entries and to print only the subject part of the number. The 016 numbers were printed out in full leaving a blank space for the colon which was inserted later. The tabulator has only one punctuation sign—the hyphen—and as this is a recognized UDC symbol it could not be used to take the place of the decimal point. The only solution was to leave blank where the point occurred and insert later.

For selection purposes the source of the journal is coded in column 74 as follows:

Main agent	Blank	HMSO	2
Presented	1	Subscription	4

For the list of presented journals the source is actually printed out from the information in columns 32–40. The letter P indicates that the journal is presented by publisher or originator and P* indicates that it is received on exchange.

Periodicals received by virtue of a subscription to an organization are also included on this list.

Abbreviations generally recognized within the Establishment are used to show location. The tabulator adds the number of copies in the different locations as it prints and the total is printed out on the last line of the entry for that particular title.

Punching was carried out direct from the eleven-column record prepared by the library staff, and the fitting of information (e.g. long titles) into the spaces available was done as punching proceeded. When all the cards were punched, two check lists were run off, one showing all the material on the title cards, the other that on the information cards. These were checked by the library staff and the punched cards corrected where necessary. The final pack contained two thousand two hundred title cards and two thousand seven hundred information cards, an average of 3.5 cards per title.

PREPARATION OF INDIVIDUAL LISTS

In order to produce any particular list the required information cards are selected and collated with the cards bearing the corresponding serial numbers in the title card pack. The programme boards for the ICT 901 tabulator are arranged so that all lists can be printed by a suitable choice of 'selector set-up' positions and only a small amount of plug-board rewiring is needed for any list. The cards can be sorted at the rate of six hundred cards per minute, collated at 13,000 cards per hour and the tabulator will handle eighty-five cards per minute. In a normal operating schedule about six hundred titles and associated information can be printed in one hour.

In terms of total time taken the work on the collator is the most important part of the job. Some ingenuity is required in making the selections and matchings for the various lists and it is on this that success or failure largely depends. Up to the present it has always been possible to find a solution to any problem that has arisen. The collator used is numeric only so that the letters used in the location symbols have to be assigned a numeric code in order to make selection possible. This difficulty could be overcome by the use of an alpha-numeric collator.

The tabulator prints on to rolls of paper or on to folded sheets which may be perforated at intervals. The size of the page is determined by the number of lines per page required in the final copy, subject to the condition that an incomplete title does not appear at the end of the page. The tabulator is set up so that approximately 13 in. of printing appears on each sheet. The particular tabulator used has no automatic paper feeding device so that the tabulator counters are used to control all calculations needed for determining the page size.

Several methods of duplication are possible and the next step was to decide on the method most suitable for each type of list, bearing in mind the number of copies which would be required and the use to which they would be put. Methods considered were carbon copies, spirit duplication, dyeline copying, direct litho reproduction, stencil, and xerography. Of these all but the last are direct methods producing a copy the same size as the original. With xerography, however, the image can be reduced photographically so that smaller page sizes may be used and a more pleasing result obtained.

A comparative study of the various processes, based on a 16-in. page size carrying a 13-in. print image, yielded the information set out in Table III. The costs quoted are based on bulk buying of materials and some adjustment must be made if materials are purchased in smaller quantities. The costs given for each master include an allowance for labour and overheads (e.g. setting up the machine, etc.) and the costs per copy include a similar allowance.

Direct methods

1. *Carbon copies*

The paper is fed from a folded pack, perforated at intervals, with interleaved carbons. The cost of each page is approximately 0.5*d* and of each carbon (used only once) 2*d*. The maximum number of readable copies is four.

2. *Spirit duplication*

The master paper can be obtained in roll form for feeding into the tabulator. The cost of each master is about 8*d* (including cost of carbon). Copies are approximately 0.4*d* per page and the maximum number of readable copies is about three hundred.

3. *Dyeline copying*

The cost of the translucent master is about 2*d* per page if fed into the machine in roll form. Copies have to be made individually and cost about 2*d* each including labour charges. Any number of copies can be made in theory but because of the time factor it would be impracticable to use it for more than ten copies.

4. *Direct litho*

The material used for litho paper plates can be obtained in roll form but the individual pages have to be separated after tabulation so that the allowance for labour and overheads must be slightly higher. The cost per plate is about 7*d* and the cost per copy 0.4*d*. The maximum run is in the region of seven hundred and fifty copies.

5. *Stencil duplication*

A plastic ribbon is required for printing on to stencils and as the speed of tabulation is considerably reduced by having to feed in separate sheets, the allowance for machine time must be raised accordingly. The cost per master in these circumstances is about 15*d* and copies cost about 0.6*d* each. The maximum run is about one thousand.

Indirect methods

The only one considered was xerography using a 16-in. page original and reducing photographically to produce a quarto-sized image. No special paper is required in the tabulator although some care in selecting the ribbon is necessary in order to produce as black an original as possible. The cost of the xerography master is about 14*d* which includes the cost of the tabulator paper.

These figures are based on an output from the Xerox cameras of about one thousand plates per week. As the method uses a smaller paper size for the copies the cost per copy should not exceed 0.2*d* and the maximum number of copies is in the region of eight thousand.

No. of copies	*Direct carbon*	*Spirit dupl.*	*Dyeline*	*Direct litho*	*Stencil*	*Xerox*
Master	0.5*d*	8.0*d*	2.0*d*	7.0*d*	15.0*d*	14.0*d*
1	3.0*d*	8.4*d*	4.0*d*	7.4*d*	15.6*d*	14.2*d*
2	2.7*d*	4.4*d*	3.0*d*	3.9*d*	8.1*d*	7.2*d*
3	2.7*d*	3.0*d*	2.7*d*	2.7*d*	5.6*d*	4.9*d*
4	2.6*d*	2.4*d*	2.5*d*	2.1*d*	4.3*d*	3.7*d*
5		2.0*d*	2.4*d*	1.8*d*	3.6*d*	3.0*d*
10		1.2*d*	2.2*d*	1.1*d*	2.1*d*	1.6*d*
20		0.8*d*		0.7*d*	1.3*d*	0.9*d*
50		0.6*d*		0.5*d*	0.9*d*	0.5*d*
100		0.5*d*		0.45*d*	0.7*d*	0.3*d*
200		0.4*d*		0.4*d*	0.65*d*	0.25*d*
500				0.4*d*	0.6*d*	0.2*d*
1000					0.6*d*	0.2*d*

TABLE III. *Cost per sheet by various methods*

For up to four copies the direct carbon method is obviously cheaper and quicker since no duplicating machinery is involved. For between four and fifty copies direct litho is slightly cheaper than the xerographic method but has the disadvantage that it involves feeding special paper into the tabulator. For any number of copies over fifty xerography is cheaper and more flexible and no special feeding of the tabulator is needed.

Using the above figures an estimate of comparative cost for each type of list may now be made. The number of lines of print per title is determined largely by the number of information cards per title as only very occasionally are there more cards in the title pack than in the information pack for a given title. A check of both packs showed the average number of print lines per title to be 2.2. Hence, with single spacing, the average number of print lines and spaces per title is 3.2 and, since there are eighty-one lines in 13 in., one page will take about twenty-five titles. With double spacing the average is 20. In the first case a list of one thousand titles will occupy forty pages; in the second case fifty pages. On the basis of these figures the comparative costs of a one thousand title list may be calculated. The results are shown in Table IV.

Up to fifty copies the direct litho is the most economical but there is really very little to choose between the various methods. For over fifty copies the xerographic method is preferable on all counts and was therefore used for all lists other than nos. 5, 6, and 7. The double spacing is slightly more expensive but produces a more pleasing result in the finished list. The divisional lists (no. 6 in Table I) are produced by the direct carbon method and lists 5 and 7 by any method which happens to be most convenient at the time they are required.

No. of copies	*Spirit dupl.*	*Direct litho*	*Stencil*	*Xerox*	
				Single spacing	Double spacing
10	£2	£1 17*s*	£3 10*s*	£2 13*s*	£3 6*s*
20	£2 13*s*	£2 7*s*	£4 10*s*	£3	£3 15*s*
50	£4 13*s*	£4 3*s*	£7 10*s*	£4 3*s*	£5 4*s*
100	£8	£7 5*s*	£12 10*s*	£5	£7 2*s*
200	£13 6*s*	£13 6*s*	£23 6*s*	£10	£12 10*s*
500		£33 7*s*	£52 10*s*	£16 13*s*	£25
1000			£102	£33 16*s*	£44

TABLE IV. *Cost of producing x copies of a* 1000-*title list.*

METHODS OF KEEPING THE LISTS UP TO DATE

Purchase of new journals, cancellation of existing journals and changes in title are responsible for about 150 alterations a year. Changes in price, in locations, and in the number of copies taken are much more numerous and probably result in about 750 amendments a year to existing cards. As the more important lists are made up only once in each year there is little point in feeding these amendments in day by day, or even week by week, and it was decided to bring the punched cards up to date once every quarter.

For this purpose an amendment slip is prepared by the library staff every time a change of any kind is made in the periodical record. These slips are passed to the punched card operators at the end of November, February, May, and August. The last date is chosen so that the check lists of periodicals purchased, which are sent to the agents in September, shall be as up-to-date as possible.

New journals are given a serial number which fixes their position in the alphabetical sequence. For example the *British journal of non-destructive testing,* which must be inserted between

0264 *British journal of industrial safety*
and 0265 *British journal of nutrition*

is given the serial number 02645. Further insertions in this area would be given serial numbers 02642 or 02647 and so on. As there are ten spaces for insertion between each four-figure serial number it should be some time before all the possibilities are exhausted. When that happens re-numbering will be necessary. A copy of the periodical amendment slip is shown in Fig. 3.

ECONOMIC CONSIDERATIONS

Not infrequently, the criticism has been made that people who use expensive machinery to do comparatively simple jobs seldom attempt an economic justification of their methods. Although this is a perfectly valid criticism it must be noted that there are very considerable difficulties in the way of making such an assessment. Obviously machines costing thousands of pounds are not purchased just to carry out simple library routines; a condition of any project such as the one described is that they have already been made available for other purposes and that there is sufficient free machine time during the year to enable such additional work to be carried out. Machines of this kind render a variety of services to the organization possessing them and the costs of any one job are not easily computed, especially if that job takes up a negligible fraction of the total annual machine operating time.

<table>
<tr><td colspan="2">PERIODICAL LISTS</td><td colspan="2">Corrections to punched cards</td></tr>
<tr><td colspan="2">Serial number</td><td>New entry</td><td>Amendment</td></tr>
<tr><td colspan="4">TITLE</td></tr>
<tr><td colspan="4">Holdings</td></tr>
<tr><td colspan="2">UDC number</td><td>Source</td><td>Cost</td></tr>
<tr><td rowspan="3">No. of copies</td><td colspan="2" rowspan="3">Location</td><td>Bound</td></tr>
<tr><td>Country of origin</td></tr>
<tr><td>Remarks</td></tr>
</table>

FIG. 3. *Periodical amendment slip.*

What is clear is that if punched card machines are available, they can make a positive contribution to the efficiency of the library service. In the present case there was a significant saving in the time of the library staff responsible for compiling the lists, it became possible to produce a greater variety of lists more frequently and, because very careful preparation is required for such an exercise, it resulted in a general tightening up of the routines used for recording and maintaining information relating to periodicals. At the time of writing the system had not been running long enough to make it possible to compute the total effort expended by the library staffs on producing the lists by the new method over a twelve-month period but it is hoped that such information will be available in due course. In the meantime the experience gained is being used to estimate the value of these techniques from the point of view of their application to other similar library routines.

REFERENCE

1. NICHOLSON, N. N., *and* THURSTON, W. Serials and journals in the MIT library. *American documentation,* vol. 9, no. 4, Oct. 1958. pp. 304–7.

APPENDIX

1. *Layout of holdings list*

TITLE	HOLDINGS	SHELF MARK
Academy of Sciences USSR	See Akademiya Nauk SSSR	
Accidents	1949 Vol. 1–	614.8
Accountant	1950 Vol. 122–	PL – ACCTS
Acoustical Society of America—Jnl.	1947 Vol. 19–	534
Acta metallurgica	1953 Vol. 1–	669
Acta radiologica	1940 Vol. 21–	PL – MED
Advancement of science	1946 Vol. 3–	5

2. *Layout of list of journals to be purchased*

TITLE	PRICE	NO. OF COPIES	LOCATION
Journal of metals	3 15 0		2 RR
			1 MET
		04	1 ISOT
Journal of meteorology	4 17 6	01	1 HP
Journal of molecular spectroscopy	6 01 6	01	1 RR
Journal of nuclear materials	6 10 0		2 RR
		03	1 MET
Journal of physical chemistry	9 09 0		1 RR
			1 CHEM
		03	1 ISOT

3. *Layout of list of journals presented*

TITLE	SOURCE	NO. OF COPIES	LOCATION
Nucleonics	P		2 CTR
			1 BRACK
			1 APP SCH
		06	2 R-SER
Nucleus—Chicago	BCSO	01	1 RR
O and M bulletin	SUB		1 RR
		02	1 ADMIN
Osaka Institute of Science and Technology—Jnl.	P*	01	1 RR

DISCUSSION

The Chairman, DR D. J. URQUHART, introduced the speakers and urged that the discussion should be linked to five questions: *i*, why use punched cards?; *ii*, what are the limitations of punched cards for library purposes?; *iii*, what is my library doing with punched cards?; *iv*, what is the future?; *v*, what will be the effects?

MRS MACKENZIE (DSIR) said that DSIR had been using punched-card methods for ten years. 3,000 separate titles were listed on 7,500 cards for thirty separate establishments. They used much the same methods as Mr Anthony had described and had found the system particularly useful for annual ordering and collating lists for suppliers. She felt that the possibilities had not been exhausted and looked forward to further developments.

MR J. D. BLACK (IBM World Trade Laboratories) said punched cards were not yet in use at Hursley, but were being used for tabulating monthly accessions in the education and programme libraries in Wigmore Street. IBM were using them also in the USA for loans and for checking library contents and holdings lists. They had developed a 'quickie' indexing system, by punched cards, for IBM reports.

DR C. GROENEVELD (Koninklijke/Shell Laboratorium) recommended the punched-card system for its versatility, by which books could be sorted by origin, author, editor, title, subject field, and language. He had an index of 50,000 cards covering abstracts of books from *Chemical abstracts*.

MR J. R. STOCKS (Shell International Petroleum Co. Ltd) wished to know if Mr Anthony or Mr Hailstone could give the minimum number of subscriptions which would make it worth while to install a machine system; he was particularly interested in the running costs, assuming the machinery to be available.

Mr Hailstone said that there were many variables such as time, number of staff, quality of staff, etc., to be considered in estimating the cost of a machine system, but if machinery were already available he would consider it worth while to adopt mechanical methods if only one of these variables could thereby be improved.

Dr Urquhart said that DSIR had first investigated the punched-card system because they were unable to find enough typists of the right quality, and without this experience it would have taken much longer to set up the Lending Library Unit; 25,000 punched cards had proved also to be a useful by-product. He thought that librarians should worry less about the cost of establishing a mechanized system but study the capabilities of the machines more closely. DSIR had acquired a 'Cardatype' machine and had now found that it would be possible, by careful programming, to use it also for Russian-English and English-Russian transliteration.

MR P. E. COLINESE (Central Electricity Generating Board) said he thought the degree of application of machine systems to library work would depend largely on the accessibility of machines. Many requirements could not be scheduled as they were only known at short notice and the machines might not then be available to give an immediate answer.

Mr Anthony, replying, said he did not think the machine system was suitable for information retrieval processes but it was ideal for routine purposes.

MR FELIX LIEBESNY (The British Aluminium Co. Ltd) said he was surprised that no mention had been made of the punched-card service of the Patent Office, through which lists of numbers of patents could be obtained.

Dr Urquhart closed the meeting with an invitation to all those interested to come and see what uses DSIR had made of punched cards during the past ten years.

Letters to the Editor

PAMPHLETS, DATING OF

Madam,

It is becoming increasingly the custom for technical firms frequently to issue pamphlets describing their products. Such pamphlets are normally distributed free to inquirers and often are of considerable value as information sources and merit accessioning and cataloguing in libraries. There is however a tendency for a number of such pamphlets not to carry publication date. This has obvious disadvantages, particularly when such publications are used to obtain a rapid survey of the topic with which they deal.

It would be invidious to specify any particular offender in this respect but if you see fit to publish this letter perhaps it might have some effect.

Yours faithfully,
V. BISKE,
Lobitos Oilfields Limited,
Ellesmere Port,
Wirral,
Cheshire.

31st August 1960.

Dear Madam,

I note from Mr G. Sceats's letter in the August issue, page 300, that there appears to be some misunderstanding about the method of counting the number of words in translations with specific reference to long words in the foreign original. It is, by the way, quite easy to beat his record: for instance—the well-known Austrian company 'Donaudampfschiffahrtsgesellschaft' with its five-word English equivalent of Danube Steam Ship Navigation Company.

The Institute of Linguists recommends that words in the original language exceeding ten letters should be charged as a corresponding multiple of ten letters, so his example of thirty letters would be three English words and my above example with thirty-three letters would also have the equivalent of three words—a loss of two words to the translator.

Yours faithfully,
F. LIEBESNY, FIL,
British Aluminium Company Limited,
Norfolk House,
St. James's Square,
London, S.W.1.

13th September 1960.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

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MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

TECHNICAL TRANSLATIONS, from German and French, promptly executed by experienced man. H. B. Andrews, 43 Wansunt Road, Bexley, Kent. Crayford 23071.

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TURKISH, FRENCH, and ITALIAN translations. All subjects. F. P. Scott, 4 Uphill Grove, Mill Hill, London, N.W.6. Mill Hill 3364.

WILFRED E. GOODAY, ARSM, DIC, MIMM, FIL. Technical translation from French and Roumanian. 161 Rivermead Court, London, S.W.6. Renown 1912.

Appointments vacant

ASLIB invites applications for the post of EDUCATION OFFICER to make a special study of the training requirements of special librarians and information officers and to organize frequent short courses in this field. Candidates must possess a university degree or equivalent qualification and have several years' experience in a special library or information department, preferably in industry. Lecturing ability and a qualification in librarianship are also desirable. Starting salary within the range £1,250–£1,750 p.a., plus superannuation benefits. Applications, naming two referees, to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

LIBRARY ASSISTANT is required for duties in the Technical Library and information service of a large and progressive West London engineering firm. Candidates should hold GCE in the appropriate subjects and be taking the Library Association examination. They should also have had library experience and possess some typing ability. Commencing salary according to age and experience. Five-day week. Apply in writing to Staff Employment Officer, C.A.V. LIMITED, Warple Way, Acton, W.3, quoting Ref. L.

MEDICAL LIBRARIAN, preferably under 40, required to take charge of medical library, abstracting and information service. Knowledge of German an advantage. Contributory pension scheme. Salary according to qualifications and experience. Apply Director of Clinical Research, CIBA Laboratories Ltd, Horsham, Sussex, with all relevant details.

A QUALIFIED LIBRARIAN is required to take charge of the Technical Library and Information Bureau of a large engineering works on the North East Coast. Duties include technical abstracting and the production of a technical information bulletin. Candidates who have the necessary experience and qualifications should make application stating age and salary required to Box 860, Aslib.

BRITISH STANDARDS INSTITUTION. Appointment of Technical Officer. The BSI requires a Technical Officer to work first on a (non-UDC) feature-card index to the contents of all British Standards, and later to assist with the preparation of the English edition of the UDC and associated duties. Desirable qualifications are a broad educational background with a knowledge of German and French, and some indexing and editing experience. Commencing salary not less than £850 a year. The post is pensionable. Applications, stating age, qualifications, etc., should be submitted to the Establishment Officer, BSI 2 Park Street, London, W.1.

DSIR, HQ, London, S.W.1, requires Experimental Officer/Assistant E.O. in scientific library. Duties include assisting with trial projects for announcement of new report material received both from overseas and from home sources. Science degree, or equivalent, facility in abstracting and/or critical technical writing and good working knowledge of German or French expected. Salary: (under review) (men) E.O. £1,075–£1,325; A.E.O. £640 (age 22)–£970. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting reference F.94/OA.

THE DISTILLERS COMPANY LIMITED has the following vacancies for librarians in Epsom and Liverpool. In all cases candidates should be in the age range 20–45, hold the equivalent of GCE in five subjects including English and English literature, and have had technical library experience. Details are as follows:

LIVERPOOL. A lady is required for the technical library of a factory in the Biochemical Division, and a standard equivalent to Intermediate ALA would be desirable. The library is cheifly concerned with biochemical, biological, medical, and pharmaceutical subjects.

EPSOM. A lady is required for the Research and Development Department, and in this case also the equivalent of Intermediate ALA is desirable. She will be responsible for one assistant, and will be expected to answer inquiries from technical staff about the availability of literature, chiefly in the fields of physics, chemistry, biochemistry, plastics, and rubber.
Write to Staff Manager, The Distillers Company Limited, 21–22 Bolton Street, London, W.1. Quote reference 106/60.

SHELL CHEMICAL COMPANY LIMITED. A vacancy exists at Carrington Research Laboratory (near Manchester) for a TECHNICAL LIBRARIAN to supervise the library and to assist with the handling of technical information on petrochemical products. Candidates (male or female) should be aged 25–35 and should preferably be science graduates with a library qualification. It is essential that they have experience in a technical reference library. Salary according to age, qualifications and experience. Generous pension scheme and other benefits. Write with full details (quoting reference CRL119) to Shell Chemical Company Limited, Personnel Department, 29/30 Old Burlington Street, London, W.1.

Wanted

Aslib proceedings: vol. 1, no. 1; vol. 2, no. 4; vol. 3, no. 1; vol. 5, no. 3; vol. 7, nos 2, 4; vol. 8, nos 1, 4; vol. 9, no. 12; vol. 10, nos 1, 5, 6, 10, 12; vol. 11, no. 1. *Journal of documentation:* vol. 7, nos 1, 3. Reply to Librarian, University of Malaya in Kuala Lumpur, Pantai Valley, Kuala Lumpur, Malaya.

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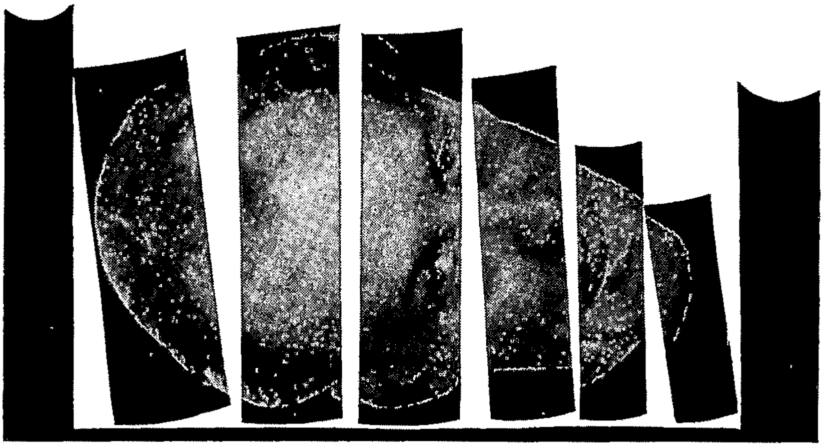

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 12 **November 1960** **Number 11**

ASLIB CALENDAR

NOVEMBER

WEDNESDAY 23rd. Winter meeting.

WEDNESDAY 30th. Electronics Group meeting. See paragraph below. Engineering Group meeting. See paragraph below.

DECEMBER

TUESDAY 6th. Visit to DSIR Lending Library Unit.

WEDNESDAY 7th. Midlands Branch meeting. See paragraph below. Film Production Librarians' Group meeting. See paragraph below.

FRIDAY 9th. Technical Translation Group meeting. See paragraph below.

1961

JANUARY

WEDNESDAY 4th. Film Production Librarians' Group meeting at Shell-Mex House.

FRIDAY 6th. Technical Translation Group meeting at Aslib.

THURSDAY 19th. Midlands Branch meeting in Birmingham.

FEBRUARY

WEDNESDAY 1st. Film Production Librarians' Group meeting at Shell-Mex House.

FRIDAY 3rd. Scottish Branch Annual General Meeting at East Kilbride.

MARCH

WEDNESDAY 1st. Film Production Librarians' Group meeting at Shell-Mex House.

WEDNESDAY 29th. Midlands Branch Annual General Meeting in Birmingham.

APRIL

WEDNESDAY 5th. Film Production Librarians' Group meeting at Shell-Mex House.

Lord Verulam

Aslib suffered a great loss in the death of its President, the Earl of Verulam, on 13th October, at the age of 50. Lord Verulam had accepted the office of Vice-President in 1958 and that of President the following year, being re-elected for 1960–1. He had first taken a personal part in the activities of Aslib in 1957, when he read a stimulating paper on 'Libraries: a liberal element in education'* to delegates at the Aslib Conference on Library Services in Technical Colleges. This paper indicated something of the liberal quality of the speaker's mind and of the extraordinarily broad range of his interests and activities, embracing, as they did, such subjects as zoology, industrial administration, metallurgy, plastics, and public health and welfare. Lord Verulam was Chairman of Enfield Rolling Mills (Aluminium) Ltd, Sternol Ltd, the British Institute of Management, the Institute of Industrial Administration, and the National Baby Welfare Society; Managing Director of Enfield Zinc Products Ltd and Enfield Cable Ltd; President of St Mary's Hospital Medical School; Governor of Bryanston School, Cranborne Chase School, and Knighton House School. He was a member of the Council of the Royal Geographical Society and of the General Committee, British and Foreign Bible Society; part-time member of the North Thames Gas Board; President of the Cremation Society; a Companion of the Institute of Electrical Engineers, and a Fellow of the Society of Antiquaries.

Annual Conference

The thirty-fifth annual conference of Aslib was held from 28th to 30th September at the Grand Hotel, Brighton. The theme of the conference was research in special library and information work and a record number of 360 persons attended. The President, the Earl of Verulam, was unfortunately prevented by illness from giving his presidential address but a stimulating inaugural address was given by Professor J. D. Bernal who had kindly consented, at short notice, to take his place.

The papers given by Mr C. W. Hanson on Aslib's research programme and by Mr L. J. Anthony and Mr J. E. Hailstone on the use of punched cards in the preparation of lists of periodicals, together with reports of discussions, have already been published in the October issue of *Aslib Proceedings*. The current issue contains the papers given by Mr J. A. Schüller, on indexing and retrieving by UDC and Uniterms; by Mr Hanson on the Aslib survey of information/library units; and by Mr T. M. Aitchison on a survey of library provision in the aircraft and guided weapon industry, together with contributions from Mrs W. I. Veasey and Dr D. J. Campbell.

The paper on the Aslib Cranfield Research Project given by Mr C. W. Cleverdon and members of the project staff will be published in the December issue, with Professor Bernal's address and a report of the officers' group meeting.

It is regretted that Dr W. O. Hassall's colour slides of medieval manuscripts and his entertaining and witty talk on and around them will not be published.

Midlands Branch

A film meeting will be held on Wednesday 7th December, at the University of Birmingham. This will be a joint meeting with the Library Association,

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* *Aslib Proceedings*, vol. 9, no. 12, pp. 365–75.

Birmingham and District Branch, and it is hoped that a showing of the film *Building for books* will be included.

On Thursday 19th January 1961, at a meeting at the Engineering Centre, Birmingham, Mr J. Mills, North-Western Polytechnic, will speak on 'Current trends in classification'.

The Annual General Meeting will be held on Wednesday 29th March at the College of Advanced Technology, Birmingham, and will be followed by a talk on the BBC Reference Library by Mr R. L. Collison, and a film on the work of the BBC.

Aeronautical Group

A winter meeting will be held late in January at which the speaker will be Captain I. R. Maxwell and the Royal Aircraft Establishment's film on the 'Black Knight' will be shown. The exact date and other details will be announced next month.

The tenth annual conference will be held next year from 13th to 16th July at the College of Aeronautics, Cranfield.

Engineering Group

The next meeting will be held at 5.30 p.m. on Wednesday 30th November at Aslib. Mr J. G. Hall, Esso Research Ltd, will speak on 'making the most of what you've got'. The meeting will be followed by a sherry party for members and friends (5*s* each).

It is hoped to arrange a visit in March 1961 to the United States Information Service in London.

Electronics Group

A winter meeting will be held at 2.30 p.m. on Wednesday 30th November at the Ministry of Aviation Central Library, St Giles Court, St Giles High Street, London, W.C.2. A paper on abstracting journals in the electronics field will be presented jointly by Mr C. K. Moore, Officer in Charge of Libraries, Royal Radar Establishment, and Mr K. J. Spencer, Deputy Librarian, Ministry of Aviation Central Library. Tea will be provided and members will have the opportunity of seeing the Central Library, where a special display of abstracting journals will be arranged. There will be no charge. Applications (which will not be acknowledged) should be sent to Mr Spencer by 21st November.

Members enjoyed a most successful visit to Mullard Ltd on 14th September. They met at Mullard House and were shown round the Electronics Centre. A showing of the film 'Manufacture of junction transistors' followed and a demonstration of stereophonic sound reproduction in the theatre. After lunch the party went by coach to the research laboratories at Salfords to see something of the work in the laboratories and to tour the library, returning to London after tea. The visit was very well organized by Mullards and their hospitality was much appreciated.

Film Production Librarians Group

Winter meetings will be held at 6.30 for 6.45 p.m. on the first Wednesday of each month, up to and including April 1961, in Room 103, Shell-Mex House, Strand, W.C.2.

Technical Translation Group

The inaugural meeting was held on 7th October and was attended by some forty Aslib members. The following officers were elected: Chairman, Mr G. N. J. Beck, Editor of *Endeavour*; Hon. Treasurer, Mr K. W. Atkin, Librarian, British Iron and Steel Research Association, Sheffield; Hon. Secretary, Dr M. Goyer, Teacher of Russian, Rocket Propulsion Establishment, Westcott, Aylesbury, Bucks. The business meeting was followed by a showing of three films, in French, German, and Russian respectively.

Further meetings have been arranged for Friday 9th December and Friday 6th January 1961. At the December meeting Mr T. C. Wong, Central Electricity Generating Board, will speak on 'Some features of the Chinese language' and Mr W. B. Woodward and Mr C. F. Foo-Kune, Lending Library Unit, DSIR, will give a paper on Chinese scientific and technical literature available in the United Kingdom. The speaker at the January meeting will be Mr D. W. Davies, BSC, National Physical Laboratory, on 'Mechanical translation from Russian to English'.

British Scientific and Technical Books 1953-7

This bibliography is a sequel to *British scientific and technical books: a select list of recommended books published in Great Britain and the Commonwealth in the years 1935 to 1952*. The new volume, edited by L. J. Anthony, contains some 3,750 entries, representing the most important and useful books on scientific and technological subjects published in the United Kingdom and the Dominions during the years 1953 to 1957 inclusive. *British scientific and technical books 1953–7* is published for Aslib by James Clarke & Co. Ltd at 56*s*.

Course on Information Work in Chemistry

A course of twelve evening lectures on means of tracing and disseminating information in the fields of chemistry and chemical technology will be held from 6.45 to 8.15 on Thursdays from 5th January to 23rd March inclusive at the North-Western Polytechnic. The course will be based on the requirements of the Library Association final examination, Part 3 (d) (ii) and should be of value to any information worker in this field.

Further details are available from Course L37, Department of Librarianship, North-Western Polytechnic, Prince of Wales Road, London, N.W.5.

Course on Research in Librarianship

A series of six lectures on research into problems of librarianship and information work will be given early in the new year at approximately fortnightly intervals, commencing in the afternoon of Wednesday 4th January. Three sessions of the series will be held at Aslib and three at the Library Association Headquarters. Further details of the series (Course L44) can be obtained from the organizers: the Department of Librarianship, North-Western Polytechnic, Prince of Wales Road, London, N.W.5.

La Traduction Automatique

The first two issues (April and June 1960) of *La traduction automatique* have been received in Aslib library. This new bi-monthly bulletin is the official organ of the Association pour l'Etude et le Développement de la Traduction Automatique et de la Linguistique Appliquée (ATALA), 20 rue de la Baume, Paris. Issues will include announcements of meetings, reports of the work of members of the Association, short bibliographical and terminological notes, reviews, exchanges of views, and basic studies on the main problems of machine translation and applied linguistics. The annual subscription is 25 NF or 20 Dutch Guilders, and subscriptions are accepted by Mouton & Co., Kerklaan 74, The Hague, Netherlands.

EXPERIENCE WITH INDEXING AND RETRIEVING BY UDC AND UNITERMS

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Head of Armed Services Technical Documentation and Information Centre, Netherlands Ministry of Defence

35th Annual Conference, Brighton, September 1960

INTRODUCTION

A COMPARISON between a classical classification card system—like UDC—and a modern selection system which makes use of the co-ordinate indexing principle—like the Uniterm system of Dr Taube—is a rather tricky affair, because of two reasons:

- *A.* *theoretically* the systems, as such, are not comparable; one cannot compare an apple with a pear—theoretically—;
- *B.* *practically* the comparison is possible but depends on several circumstances and viewpoints. If one prefers pears to apples in general, one still may prefer a good apple to a good pear on certain occasions. For instance in the early morning.

About the *differences* between both systems I have presented a paper at the tenth meeting of the Nato Agard Documentation Committee in October 1958 in Copenhagen. During that talk I have tried to explain the real differences and to weigh out the advantages and disadvantages against each other in order to make it possible for a documentalist to choose from the two systems the most suitable one for his own particular collection. I should like to point out straight away that one will probably never be able to state: this is the better system of the two. If you have made your choice to use system A, you surely will come some day to the conclusion that system B would have come in handy to solve the specific problem which keeps you busy and annoys you at the moment.

There are certain other general points which I would like to deal with before getting down to my subject.

This paper will not try in any way to anticipate or to cross the Cranfield project, which is not only on a far larger scale but which is also intended to be a purely experimental piece of research under controlled conditions.

The conclusions which I am coming to are drawn from small-scale tests, amounting to a few hundred cases *and* to specific TDCK experience acquired in the course of a few years' practice. The outcome may be exclusively of use to technical information centres or institutes rather similar to, or at least comparable with, TDCK.

As I said: with the scope of the institute—for which an information officer has to work—in his mind, he will have to make a choice from existing indexing systems. In many cases he may decide to use a certain existing system in which he will introduce a few alterations—mostly small ones—in order to meet specific needs.

In some cases he will even build up a new specialized system, which usually will be very simple and just fit for his limited area, where no connection with the outside world is wanted or useful. But anyway the information man or librarian has to make his choice.

At TDCK we have made our choice resulting in the use of UDC and Uniterms or units of thought. For reports we keep an alphabetic source index which is very useful, and for some areas we also have an author index at our disposal.

To give background to my conclusions I shall have to give you at first a brief overall picture of TDCK and its activities, since such insight is needed in order to appreciate our choice in close relation to our scope and function.

I

The Armed Services Technical Documentation and Information Centre (TDCK) was founded in its present form in 1954. Before that date it was the technical and scientific documentation and information section of the Netherlands Royal Naval Scientific Service. This baby—as many others—was born after the second world war. For the last six years now our centre has had a wider scope and far more customers than before, not being limited specially to serve naval research purposes.

The many technical bureaux, institutions, laboratories, training centres, workshops, etc., attached to each of the three services have a great and self-evident need for up-to-date technical information. So, as I have just mentioned, the scope is much wider and consequently many questions have become less specialized, not being focused on research specifically but on the contrary mainly on practical engineering applications.

Of course nearly all technical activities in the Netherlands move on a far

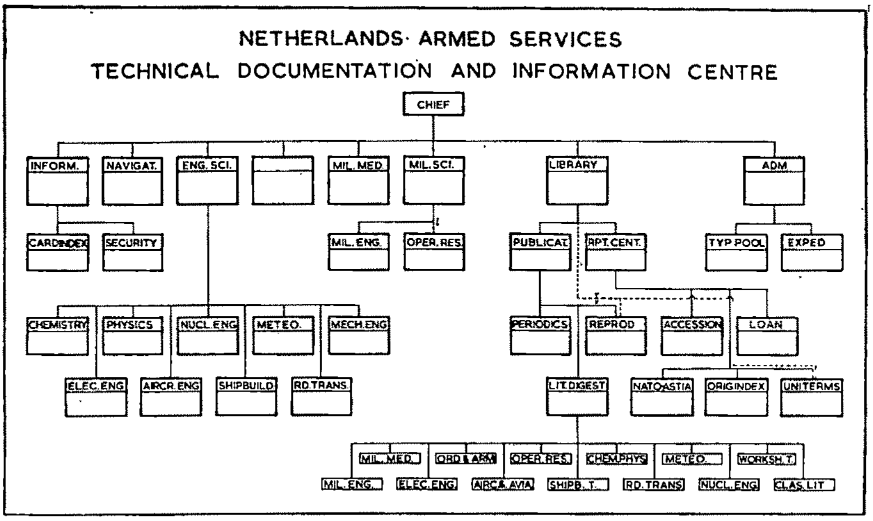

FIGURE 1

smaller scale than they do in big countries, like yours, but the need for communication of knowledge in ours is just as great as anywhere.

I shall try now to explain, briefly, how TDCK has been organized and how it works.

The centre falls directly under the Minister of Defence. There is an Advisory Council consisting of four members, three of them being high-ranked officers of the Navy, the Army and the Air Force; the fourth member is the director of TDCK. This council advises the Minister at his request or on its own initiative concerning TDCK matters. TDCK personnel amounts to about fifty people.

The centre comprises the following departments:
Information, Navigation, Engineering Sciences, Military Medicine, Military Sciences, Librarians Department, and Administration.

The head of the Information Department is—at the same time—TDCK's security inspector. He is responsible for the supply of classified literature to customers on a need-to-know basis. The Information Department handles questions concerning TDCK activities and renders introductory assistance on request. Requests for specialized information are always directed to the specialist concerned.

The Department of Engineering Sciences is broken down into nine sections, each of which is manned by one or two technical officers who hold an academic master's degree.

Military Medicine is the sole business of a medical doctor. He has two desks in his room; the second one is very often occupied by some medical officer who has a special mission to fulfil and who finds the needed documentation near at hand. The same thing applies for the chemical and the meteorological sections which also very often have semi-permanent guests.

We encourage the visitor with a special commission to be our semi-permanent guest for the time he needs to finish his study or report, in order to be able to make the most effective use of our collection and our assistance.

The Military Sciences Department is one of the most important divisions, keeping in mind that TDCK is a military institution.

It differs from the other technical sections in so far as no abstracting service in the world—as far as I am aware of—publishes or distributes classified abstracts in this field outside its own country. This department is conducted by a lieutenant-colonel artillerist. The sections Ordnance and Armament, Military Engineering and Operational Research fall under his supervision. The Operational Research section is principally concerned with military applications.

The librarian—a qualified librarian as you may guess—is in charge of three sections: the Library, the Report centre, and the Publication section.

The Administration falls under a what you would call WRNS officer—she is actually my secretary and as such in charge of the Archives, the Typing Pool and the Dispatch Section.

As you may have noticed from this scheme, the centre could be divided by an imaginery line into two divisions, a technical and an administrative or library one.

The technical division is exclusively manned by technical qualified people with documentation training, while the library division has three qualified

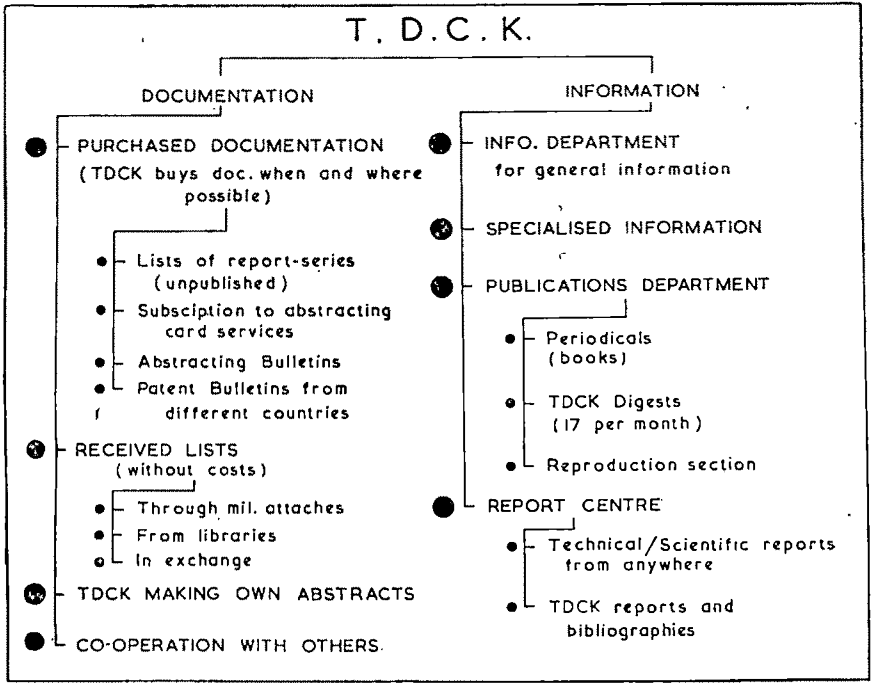
T. D. C. K.
DOCUMENTATION
INFORMATION
PURCHASED DOCUMENTATION
(TDCK buys doc. when and where possible)
Lists of report-series (unpublished)
Subscription to abstracting card services
Abstracting Bulletins
Patent Bulletins from different countries
RECEIVED LISTS (without costs)
Through mil. attaches
From libraries
In exchange
TDCK MAKING OWN ABSTRACTS
CO-OPERATION WITH OTHERS
INFO. DEPARTMENT
for general information
SPECIALISED INFORMATION
PUBLICATIONS DEPARTMENT
Periodicals (books)
TDCK Digests (17 per month)
Reproduction section
REPORT CENTRE
Technical/Scientific reports from anywhere
TDCK reports and bibliographies

FIGURE 2

librarians all of them with a pronounced technical interest, two of them even holding a technical certificate.

I suppose that a *pur sang* librarian with a special liking for books, for history, humanities, and manuscripts would feel very unhappy in our centre, and probably—from the other point of view—would not do very well.

Our task may also be divided into two separate activities, namely documentation and information as you may see from Fig. 2.

TDCK, buying documentation when and where possible, does only supplementary work.

Most of the documentary work will be recognized as normal by information officers and librarians of other institutes. The item 'co-operation with others' needs some more explanation, for which I refer to Fig. 3.

The co-operation which is meant here is limited to the actual documentation activity. We distinguish national and international co-operation. The national co-operation comprises: Road transport, where six different institutes work together; Workshop technique with thirteen co-operators; Aviation technique, five co-operators, and Nuclear Engineering with five co-operators.

The circle below indicates a pool where TDCK does its share. SAMCAD (an abbreviation for co-operating centres for automobile documentation in the Netherlands) publishes a joint bi-monthly digest which appears under different covers.

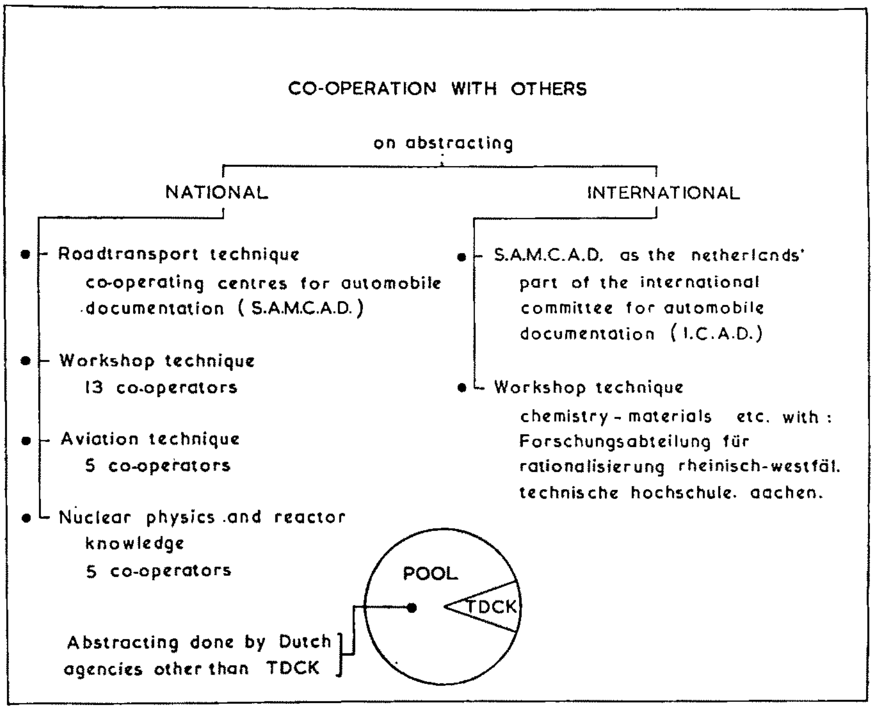
CO-OPERATION WITH OTHERS
on abstracting
NATIONAL
INTERNATIONAL
Roadtransport technique
co-operating centres for automobile documentation (S.A.M.C.A.D.)
Workshop technique
13 co-operators
Aviation technique
5 co-operators
Nuclear physics and reactor knowledge
5 co-operators
S.A.M.C.A.D. as the netherlands' part of the international committee for automobile documentation (I.C.A.D.)
Workshop technique
chemistry - materials etc. with : Forschungsabteilung für rationalisierung rheinisch-westfäl. technische hochschule. aachen.
POOL
TDCK
Abstracting done by Dutch agencies other than TDCK

FIGURE 3

Co-operators of the Aviation technical pool are KLM, Fokker, Min. of Civil Aviation, NLL and TDCK—just to give an example.

From the pool, any co-operator may compose his own literature digest.

In the beginning, during the first half-year, many problems had to be solved, the material had to be divided, and in some cases a common UDC schedule had to be made, in order to use the same classification numbers. One of the co-operators was nominated as pool leader or co-ordinator. Everyone did such part of the abstracting load as seemed, in his opinion, most important for his own institute or factory.

This measure—as may be appreciated—resulted in a good abstract quality. The more co-operators the less work for every one of them. All these four pools are working excellently, smoothly, and efficiently.

International co-operation operates on another level and results in the exchange of digests or card indexes.

Figure 3 only cites two typical examples, but there are many more with many countries. To quote some exchanges with this country, I could mention that TDCK receives: Report series of TIL of the British Ministry of Aviation; The *Index Aeronauticus*; The British Shipbuilding Research Association abstracts and many others. An important American source is ASTIA's report series.

In my opinion, co-operation with others is a most important aspect of technical information.

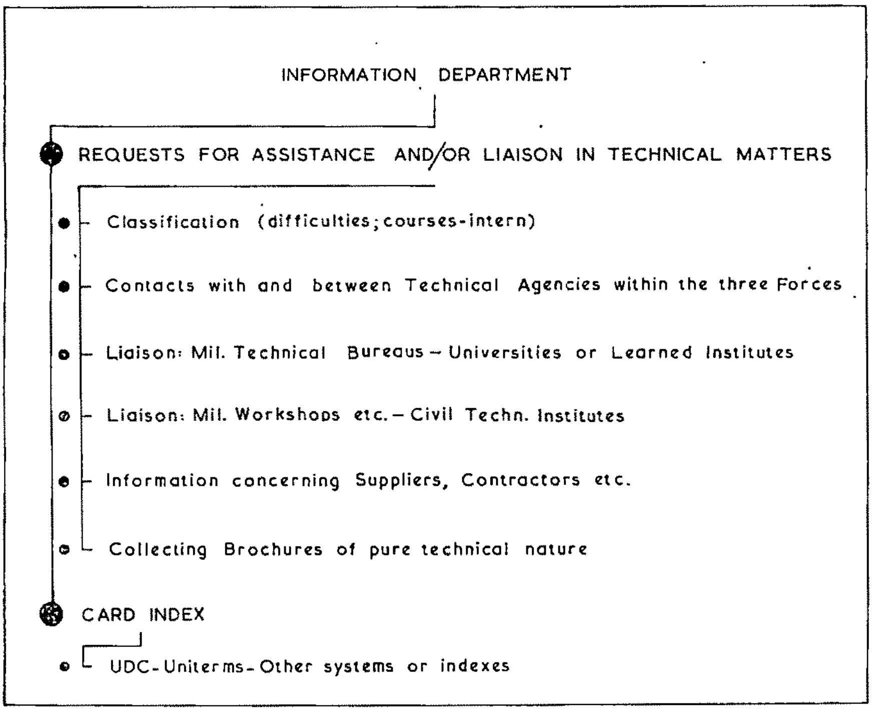
INFORMATION DEPARTMENT
REQUESTS FOR ASSISTANCE AND/OR LIAISON IN TECHNICAL MATTERS
Classification (difficulties; courses-intern)
Contacts with and between Technical Agencies within the three Forces
Liaison: Mil. Technical Bureaus – Universities or Learned Institutes
Liaison: Mil. Workshops etc. – Civil Techn. Institutes
Information concerning Suppliers, Contractors etc.
Collecting Brochures of pure technical nature
CARD INDEX
UDC-Uniterms-Other systems or indexes

FIGURE 4

Referring to the information task of TDCK (Fig. 2) I should like to make a few remarks about our *information department.*

As may be seen from Fig. 4, this department is a typical service-giving section, internal as well as external. It is very important that the head of this department should be kept in the picture of all activities within the centre on the one side, and should keep abreast of matters of technical interest in and outside the country on the other side.

Specialized Information (see Figs. 1 and 2)

For specialized information TDCK has four departments: Navigation, Military Medicine, Military Sciences, and the Engineering Sciences.

Under the chief of the Military Sciences department we find the Ordnance and Armament, Operational Research, and the Military Engineering sections.

Engineering Sciences comprises the following sections—as I told you, most of these are manned by one or two university-trained specialists, who are military officers belonging to the Navy, the Army and the Air Force. The domains are: Chemistry, Physics, Nuclear Engineering, Meteorology, Oceanography and Climatology, Workshop techniques (Mechanical Engineering), Electrical Engineering, Aircraft Engineering and Aerodynamics, Shipbuilding and Shipping techniques, Road Transport techniques.

Each domain has its own colour, which is carried into many details for the sake of efficiency. Thus every section issues a monthly or bi-monthly literature digest and you will find these colours on the different issues. When in the future we have to increase our sections and issues, I am afraid that we shall run into serious trouble because there are no more colours.

The average distribution of these digests amounts to about two hundred and fifty. The two hundred different issues per year (which means one almost every working day) are reaching about three thousand different customers or bureaux, within or closely related to the armed services. The distribution is free of charge and recipients can also have on request a photocopy of any complete published article, also without cost, while a report is usually furnished on loan. If a report is wanted for retention, a copy is furnished on long loan. In consequence of these issues some twenty thousand requests for complete photocopies have been handled during the year 1959.

The Report Centre collects the technical and scientific reports from many sources and countries. Our accession lists show that about 1,300 reports are received each month. Every technical or scientific report which is wanted for the armed services will be ordered by TDCK. TDCK is required to keep a centralized complete report-documentation. These reports are indexed by about ten to fifteen different entries.

Principally TDCK can distinguish two tasks focused on two different aims:

1. the documentation task which gives information when asked for;
2. the publication task which draws the attention of military and civil technicians and scientists of the three services to important new scientific or technical facts, and thus helps to keep those people up to date.

A few remarks about the first task.

Everybody in this society knows what documentation comprises, so I need not try to add a new definition to the many existing ones.

Technical questions which are put to our centre are answered according to the needs of the questioners.

We may procure, for instance:

1. a single report or article, or a number of them giving the wanted information;
2. a bibliography consisting of titles (very seldom);
3. a bibliography consisting of titles and abstracts (most often);
4. a critical literature report (always containing a list of references);
5. anything in between or a combination of the former four possibilities, including an oral answer.

Every fortnight TDCK has a technical staff meeting of which the librarian is also a very welcome member. We come together in our conference room to discuss all the specific technical questions which have been put to our centre during the last two weeks.

Each engineer in order is invited to report and anyone has the right to make useful remarks.

As you may appreciate, many technical problems have more than one aspect or facet. For instance: some difficult electrical isolation problem, which has been put to our electrical section, may show a definite chemical aspect—and, when the electrical specialist did not approach his chemical colleague beforehand, then our meeting does this job for him.

I must say that these meetings have proved to be very useful. The lively discussions also promote the feeling of solidarity within our centre, not only because everyone hears what is going on outside his own immediate area but also because our technical officers are wearing different uniforms.

As for our customers, I should like to state that, although TDCK has been running for five years, many potential users have not yet found the way to our institute, despite several publications and lectures. In this connection I remember a pronouncement made by H.R.H. Prince Philip of Edinburgh: 'You can lead a research worker to the water of scientific information, but you can't make him drink.' The same thing applies in the Netherlands and I am afraid that this is an international disease.

II

Coming now to the gist of my talk—the use of different systems for retrieval means—I should like to start with a few general remarks.

The application of two systems which differ fundamentally in their nature and philosophy will always put us in command of the sum of the possibilities inherent in each of the two systems. Of course, this means too that more work has to be done. The practice, however, indicates that this 'more work' has to be done on the input side and that, in many cases, one will meet with less work and surely more completeness on the output side.

I have not been able to measure accurately the time needed for indexing by UDC against the time which is needed for indexing by Uniterms and compared again with the time needed for indexing by UDC *and* Uniterms in one action, but it is my opinion that the time needed for indexing by UDC and Uniterms will be shorter than the sum of the times wanted for indexing by UDC and by Uniterms separately.

Indeed it does not take a very long time for the technical documentalist to add a couple of Uniterms to the abstract which he has already classified by UDC or I could put it the other way round and state that after some experience the documentalist will jot down his Uniterms during the scanning and abstracting of the document and, in many cases, these Uniterms will prove useful by defining the UDC numbers.

The fundamental difference between the 'classical card systems' and a modern selection system is to be found in the co-ordinate indexing principle.

Combination of parameters in the Uniterm system does not take place during the input activity, but during the retrieval action by the searcher, which is a simple matter because all permutations are latent and on hand. This, of course, in contrast with a classification system (as UDC is), where the choice of the combination of parameters is made during the indexing action, with all the consequences. With three parameters, for instance, we have theoretically $3 \times 2 \times 1 = 6$ permutations.

Whether all six will be put into the system depends on several considerations and circumstances. With four parameters we have 4! or 24 permutations. The input of all 24 will practically never take place. So we actually choose a few from the lot, and notably only those which we can remember at that very moment. Here the loss may be important because we should realize that a certain permutation seeming improbable just now may be important in the future.

The working out of this consideration—which of course is well known to you—has actually driven TDCK to the decision to use both systems for indexing and retrieval purpose.

UDC, mainly because of its international or rather universal aspect, enables us to post into our system, without much difficulty, abstract cards with UDC numbers collected from elsewhere. But, for the possibility of browsing, which I consider as a very useful occupation, the Uniterm system is used because of the advantage of the co-ordinate indexing principle I have just mentioned, and the fact that this system is always up to date by nature. There is also another practical point which I should like to mention, mainly because we are touching here the practice and efficiency in abstracting.

To explain what I mean, it is perhaps useful to remember how certain documentation bureaux try to eliminate the influence of the abstractor's personal viewpoint—be it a commercial, a scientific or a technical or yet another viewpoint. I am in contact with a German institute which subscribes to five or six different abstracting services, all handling the same subjects from the same sort of literature. In a way these services are multiplicating—not in all ways, however, because they approach the literature from their own angle of vision. So this German institute receives five or six abstracts of the same article or report. All these abstracts differ according to the task of the industry or laboratory for which the abstractor is working. Then these five or six abstracts are combined into one abstract, consisting of no more than about eighty words, stripped of all superfluous frills and very much to the point, giving only facts. TDCK has a close co-operation with this institute and receives copies of this newly composed card index, so that I know by experience that these abstracts are very good; even splendid. Only—and now I am coming to the classification—they need many numbers for proper translation into UDC. Six to eight or ten is quite normal, but even more are often desirable. Well, since we receive the abstract on transparent paper, of course we could easily make enough copies and put those into our UDC card index in ten places, but actually we only add perhaps fourteen to twenty Uniterms—simply by underlining the wanted term in the text—and put this abstracts card by accession number into the Uniterm file.

We can safely do this because in this special case most of the periodicals handled are difficult to acquire, originating from behind the Iron Curtain and only wanted for exhaustive bibliographies and long-term studies.

If we did not do this, the filing of one article or report in eight or ten different places would, with the rapid growth of literature, result in enormous card-catalogues.

I suppose that in practice few difficulties with either of the two systems (UDC and Uniterms) would arise, if the operator were able to handle the systems according to the theoretically drafted manuals. What remains, for instance, of the continuity of the viewpoint of the UDC indexer, if there is no continuity with the person who is doing the indexing job? Alphabetical UDC indexes are helpful but we never keep those up to date. I do not know if the British information bureaux are lucky enough to keep their abstractors for years and years. We, in the Netherlands, are not so lucky. TDCK, anyway, changes at fairly regular intervals. Apart from favourable exceptions this takes place after about two years, so that in practice the viewpoint of TDCK changes with the same rhythm. We often find that, after all, an initial viewpoint was better than the later one, and we then feel lucky to have a second system at our disposal.

The big questions in information are always: do we get out what we have put in, and did we put in what we have. The Uniterm system has now produced reports many times, provided with UDC numbers which had not been found in the UDC card index, because of the different approach to the problem at the indexing and at the retrieval end. In many cases the logical specific UDC numbers were missing. This is the human factor in the operation of a clever but rather complicated system.

In course of time we have gained some experience, and in several cases we now consult either one of the two systems—or both—depending on the scope or the *quality* of the query which has been put to our centre. If a visitor is in a hurry—coming in at ten minutes to five in the afternoon (people often seem to be in a hurry at that time)—we surely consult UDC. All information neatly at hand—and Mr Questioner is off within five minutes. TDCK appears to be very efficient sometimes.

I am not going to sum up all the well-known drawbacks of the UDC classification. You could perhaps agree with me that 95 per cent of all those noted deficiencies do not affect this very ingenious system as such, but that these are largely, if not only, due to mal-interpretation of this system. UDC is reasonable enough, but we are making in many respects a mess or at least a poor show of it; and to be fair, it is a difficult system to handle properly. On the other hand, the UDC catalogue has many times produced reports or articles which had not been found by the Uniterm system.

Of course the co-ordinate indexing system also has drawbacks, and one of them lies in the fact that it certainly takes a few years to get an alphabetic index ready available for use, which is bad enough. We in TDCK have been lucky to receive such an index tailor-made by ASTIA for their report-series, and we think that this thesaurus will do very well for our own collection and accessions.

The redundancy and high degree of ambiguity, often cited as two serious defects in the application of co-ordinate indexing systems, have in our case in general not turned out to influence the output in a bad way.

But because we *are* not always sure, we have our second system to *make* sure.

I quite agree with Cleverdon and Thorne when they say in their report 'A brief experiment with the Uniterm system of co-ordinate indexing for the cataloguing of structural data' that a careful analysis of the vocabularies in Uniterm systems is required. Of course this is right.

To avoid incompleteness and to correct synonyms, in TDCK *all* our Uniterm slips are inspected by the librarian, who acts as the Uniterm co-ordinator. This has become a regular routine.

Homonyms do not give us much trouble.

The Uniterm alphabetic card-index contains most synonyms where a 'see'-note does the work. We are still introducing more 'units of thought' into this file.

Queries on subjects which are well defined by UDC, let us say: Effects of Projectiles—623.56, are quickly recovered from UDC files. But requests for certain aspects of specific weapons, or fighter-planes: for instance, explicitly concerning Honest John, Bloodhound or Terrier; Starfighter (F 104) or

bronnen aanwezig op t.d.c.k.	aanwezig op kamer	chemie	electro	luchtv.	meteo	natuurk.	navigatie	scheepsb.	werktuigb.	bewap.	transport	mil. genk.	krijgsbk.	
u.d.c. kartotheek	k	x	x	x	x	x	x	x	x	x	x	x	x	
uniterm kartotheek	r c	x	x	x	x	x	x	x	x	x	x	x	x	
c.c.l. kartotheek	k			x		x			x	x	x		x	
i.s.l. kartotheek	k						x	x						
brochure kartoteek	p	x	x	x		x	x	x	x	x	x	x	x	
t.i.p. kartotheek	r c	x	x	x	x	x	x	x	x	x	x	x	x	
bronkaarten op instelling	r c	x	x	x	x	x	x	x	x	x	x	x	x	
engineering index	w	x	x	x	x	x	x	x	x	x	x	x	x	
index aeronauticus	l		x	x	x		x		x				x	
electrical abstracts	e		x				x				x			
physics abstracts	n					x						x	x	
nuclear science abstracts	n	x	x			x			x				x	
a.s.m.e. index deel I en 2	w	x		x				x	x		x			
batelle tech. review abstracts	w	x	x	x		x			x		x		x	
fuel abstracts	w	x							x		x			
light metals bulletin	w	x							x		x			
titanium abstract bulletin	w	x							x					
meteorological abstracts	m				x									
prev. of deterioration abstracts	c	x	x							x	x			
corrosion abstracts	c	x	x					x	x		x			
kirk & othmer	c	x				x				x				
index nasa tech. publications	l			x	x	x	x		x	x				
index rand corporation	k		x	x	x	x				x				
index bios & fiat rapporten	i		x			x				x		x		
index u.s. gov. research reports	k	x	x	x	x	x	x		x	x	x	x	x	
monthly catalog	k	x	x	x	x	x	x	x	x		x	x		
index instr. films UDC 778.5	r c	x	x	x	x	x	x	x	x	x				
b.s.r.a. abstracts	s	x				x	x	x	x					
galvano referate	k	x							x					
v.d.e. schnellberichte	e		x											
dechema werkstoff tab.	c	x	x											
current list of medical lit.	g											x		
aeron. engng index	l			x										
air univ. periodical index	l													

FIGURE 5

Sabrejet (F 86) and so on, are answered more quickly and without risk of incompleteness by the Uniterm punch-card system.

On the other hand, if specific data are wanted on subjects like: Measurements on ship models (this is just an example) we do not use either of the two named systems, but our Naval Constructor starts his search right away in the source index under the five or six headings for model towing-tanks, where all these kind of reports and articles are to be found together in a few minutes' notice. Such a procedure narrows the retrieval problem for us and avoids the scanning of much irrelevant material, guaranteeing, moreover, complete information, while in the meantime the two principal systems are not blocked.

Our sources index comprises some three or four thousand institutes, all over the world. It is a much consulted and useful system for special cases. I need not tell you this.

When comprehensive bibliographies are wanted, our engineers will have to consult many sources within our centre.

This chart summarizes these sources. A large copy of it is to be found in all technical sections: then if a bibliography is wanted on an electronic subject all sources marked under electro have to be consulted. This will give us all the data TDCK hold.

Dependent on the subject, some sources outside TDCK will give also useful information, for instance PTT documentation, the Patent Office documentation and even professors of technical high schools may be consulted. Everything possible should be done in order to deliver a complete bibliography.

Coming back to the use of the two systems, UDC and Uniterms, in my centre, I would like to mention another motive, which is in my opinion a very real one.

We all know that automation in documentation today is only of real importance to the large institutes with very big collections and enormous accessions. In the future, I am sure, this picture will alter in so far that most of the present what we now call 'middle sized' documentation bureaux or centres will disappear, because they have become, perhaps *nolens volens,* what we now call 'very large documentation institutes'.

There are two reasons for this:

1. The flow of literature will keep increasing with as great a factor as the university-trained population is increasing, because every special field will cease to be 'limited' in the general significance of this word—think of the overcrowded universities in all parts of the world; all those scientists and engineers are going to publish literature.
2. Good working translation pools which certainly will also make use of automatic systems will overflow us within a few years with translated literature from the Russian, Chinese and who knows what other language. This source will also redouble our collections.

Once the machine has been taught not only to memorize but to extract and translate the significant material, it will make the information easily and quickly accessible to those who need it and who can act upon it. The awesome truth is, as Ritchie Calder has put it in *Unesco Courier,* that this will produce more discoveries and more papers and more machines to cope with them.

Well, I think that we have to work towards more and more co-operation and integration on special fields on the one side and to prepare ourselves for the use of automatic systems on the other.

Per country, or in certain cases per language-area, we shall have to found specialized documentation centres. I am not sure, but I believe that the Germans—just now—are working out plans which proceed towards that idea.

Concerning the automation side, we as information people are confronted with many problems of which that of machine language is perhaps the most awkward and immediate one. Now, as far as the machine technical language is concerned, it is my feeling that we should try to accustom ourselves to the use of it and to train our documentalists in the practice of machine language, because we may be sure that this will come in handy within a very few years.

Practically every system can be mechanized in some way or other. A certain system, however, may be particularly suited to a particular system of mechanization. If such is the case and it can be achieved without costly apparatus and with much saving of time ultimately, then this system has a notable advantage.

It is very easy to mechanize a co-ordinate indexing system. TDCK has put the Uniterms on peek-a-boo punch-cards, and is gradually altering some Uniterms into units of thought or descriptors. I am afraid that today there is no time to go deeply into this matter, but I think I should mention the fact that only with good descriptors may we establish a machine language foundation which differs fundamentally from any spoken real or artificial language such as Prof. J. W. Perry has suggested. ASTIA in the United States has composed a descriptor-thesaurus of about 7,000 items, and new ideas or notions may be put in at random. We encourage our documentalists to make short meaningful abstracts, to use many Uniterms and to avoid superfluous text.

If TDCK in the future has to switch to automatic systems we are to some extent prepared. I may add that some of these descriptors probably may prove to be unusable for non-technical translations, since the technical descriptors try to exclude synonyms while literature most often needs the richness of a language. You remember the translation machine English–Russian where the English put in 'out of sight out of mind', and where the Russian translation put out: 'invisible idiot'.

III

To give you an idea of the efficiency of the use of UDC *and* Uniterms in TDCK, a few hundred questions have been put to both systems.

The questions are very real ones, since they are lifted from the stock book in which—for several years—all queries which have been put to TDCK are registered. The questions have been taken at random; they have not been selected.

I should like you to remember that this is a limited and practical research and actually perhaps only valuable for TDCK. All TDCK shortcomings and mistakes are incorporated in the outcome of this test. Great care has been taken that replies to the queries fall in the period of the last few years when co-ordinate indexing joined the UDC classification.

Concerning the allocation of Uniterms, I should mention the fact that at TDCK, apart from the contents of a document, the title is also used.

We seldom use more than twenty-five Uniterms for one document although the number of Uniterms per case has never been limited.

Test 1

As may be seen in Appendix 1,* 100 queries have been put both to the UDC system and to the Uniterm card system. The UDC numbers and the Uniterms allocated by the engineers are reported; as is the time (in minutes) which was needed for the retrieval action.

The number of documents retrieved has been split up in 'relevant' and 'irrelevant'; these four columns are divided in the middle of the page by a column which gives the number of items which the two systems have both found.

Number of Questions	UDC			*Found by both systems*	UNITERMS		
	Time in mins.	*Irrelevant Documents*	*Relevant Documents*		*Relevant Documents*	*Irrelevant Documents*	*Time in mins.*
100	4042	4908	698	482	739	528	3981

Relevant Documents

Found by both systems:	482	50 per cent	No difference in time. For both systems about 40 minutes per question.
More documents found by UDC:	216	23 per cent	
More documents found by Uniterms:	257	27 per cent	
Found in total:	955	100 per cent	

Although in this very limited test the Uniterm system has given slightly better results, UDC has still procured many valuable documents not found by the other system, which fact will support TDCK in its conviction that the two systems should be used together.

Test 2

A second test which has been made concerns the retrieval of specific reports which are known by title from the report-centre collection.

To this end 200 queries have been put to both the UDC and the Uniterm system (see Appendix 2).* Report titles have been taken at random from the ASTIA AD series.

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* Appendix 1, 'Comparison of the results of 100 questions put to the UDC and Uniterm Systems (articles from 1958 and 1959 only)', and Appendix 2, 'Retrieval of 200 reports by UDC and Uniterms', were made available at the 1960 Aslib Conference as preprints but they proved to be too long to be included in the *Proceedings*. Any reader wishing to consult them should apply to Aslib.

The times in minutes needed for the retrieval action by either of the two systems have been noted down separately.

It was thought not to be appropriate to include the time needed for the allocation of UDC numbers or Uniterms, because these two activities were mixed up and could not be properly divided in this test.

Ultimately the following results have been found:

Using UDC

2093½ minutes, or 34 h. 53½ m. have been spent by TDCK *engineers* to consult the UDC system for these 200 queries. This means an average of about 10 minutes per report.

37 reports (18½ per cent) have not been identified, which took 874 minutes, or 14 h. 34 m. This means an average of round 23½ minutes per report.

Using Uniterms

309 minutes, or 5 h. 9 m. have been spent by the *librarian* for the same 200 queries to consult the Uniterm punch-card system. This means an average of round 1½ minutes per report.

2 reports (1 per cent) have not been identified, which took 10 minutes. This means an average of 5 minutes per report.

From these numbers we have drawn the following conclusions for TDCK.

If a specific ASTIA report which is known by title is wanted, the librarian will use for retrieving means the Uniterm punch-card system of co-ordinate indexing instead of the UDC classification system for the following three reasons (keeping in mind that all documents are indexed by both systems):

1. There is an average of only 1 per cent chance that the report will not be discovered, against 18½ per cent by UDC.
2. The average search will last only 1½ minutes against 10 minutes by UDC.
3. The librarian does not need the help of a technical information officer to recover a specific report.

In other words: for a collection of technical reports, we recommend the use of the Uniterm system for cataloguing means.

If, at last, the two small tests are compared we may come to the conclusion (which was already an admitted fact with us) that at the retrieval end the Uniterm punch-card system is much quicker—about four times quicker—than the original Uniterm column-card system.

For this reason TDCK is abandoning this original system and will start this year a newly designed punch-card with 20,000 places, using 2 mm diameter holes.

Acknowledgments. The author wishes to thank Messrs C. D. Brix, librarian, and A. C. van Schaik, Chief Engineers Department of TDCK, for their much appreciated assistance in the executing of the tests and he is very grateful to Mr A. H. Holloway for correcting the English text of this paper.

SUPPLEMENTARY NOTE

In the course of his presentation of his paper at the Conference, Mr Schüller enlarged upon certain aspects. Thus, commenting on the results of Test 1, he pointed out:

'The time involved for both systems, including relevant and irrelevant documents, did not differ very much. Of course it would be very useful if we could speed-up the retrieval action of either of the two systems.

Concerning UDC we are still engaged in simplifying this action by adjusting the UDC schedule to specific TDCK needs, and in compiling indexes for all areas. Both of these are time-consuming activities, but they will certainly result in quicker work. TDCK has not been able to put UDC on punch cards.

The Uniterm system, on the other hand, is still more in a state of development and these very tests have pointed out weak spots and imperfections which we hope can easily be rectified now that we are aware of them.

If someone would ask: "What is the reason that so many documents have been missed by UDC as well as by the Uniterm system?" I am inclined to answer that, apart from the fact that no system is watertight and that where work is done mistakes are made, both systems have certain aspects which easily lead to misinterpretation and omissions. A few examples follow.

TDCK application of UDC

a. We often find that a specific notion is to be found in different places and that in some cases the logical building-up has been discarded.

For instance, if we are looking up *illuminating engineering, lamps, lighting,* etc., we find:

628.9—Illuminating engineering.
628.94—Lamps, projectors.—(all right—good subdivision).

but 621.3.032—Lamps, details.
621.32—Electric lighting equipment, lamps.

then 022.7:628.9—lighting of libraries.
629.1.06:628.9—lighting of vehicles—all right.

but inconsequently

622.447—electric lighting of mines.
658.24 —lighting of works and factories.
644.3 —lighting, household economy.

The same applies for *Time measurement.*

b. In many cases the UD classification is too much detailed for an efficient subdivision of our own cardfile, which gives rise to omissions because a great number of tab-cards indicating sub-sub divisions are followed by only one or two abstract-cards, in which cases the numbers on the tab-cards are no longer readable.

A specific index containing all UDC numbers to be used with TDCK is being compiled. Several of the most important divisions have been completed already but there is still a lot to be done.

c. On page 379 of the paper I have made a distinction between a classical card system and a system of co-ordinated keywords.

The mathematical approach, of course, is pure theory and should not be judged too severely by practical viewpoints. What I would like to stress is that with the handling of classification systems we find difficulties in pin-pointing the classification notation on unexpected questions. This is the point.

Many of the questions put to us are unexpected. If not, documentation would be much easier and very much more compact. We still do not know how much per cent of all the accumulated knowledge in our centres will ever be used.

I shall give a simple example to illustrate what I have meant by making a choice of combination of parameters at the input or at the retrieval. Let us take the following imaginery report, dated June 1953, entitled *Origin, birth and behaviour of the typhoon "Nora"*.

This meteorological report describes the weather circumstances, the velocity of winds and the courses of "Nora", influenced by weather conditions in the several countries visited by this girl. Ultimately damage done by high waves and wind in the Philippines, Hong Kong, Formosa and Japan are also mentioned in a short paragraph.

The trend of the report, however, is purely meteorological. Now for the classification:

I should think that a meteo number for typhoons is easily given, perhaps rather detailed and if UDC is properly handled, the "Nora" report is easily accessible for any relevant meteorological question. E.g. 551.515.23 NORA (914 + 512.317 + 521 + 522).

But if a question comes up like: "What damage by calamities have struck Japan during the year 1953" then there is only a small chance that this report would turn up from the UDC card-index, because the causes of calamities differ from wood-fires to atom bombs, from epidemic diseases to floods by rivers, from typhoons to heaven-knows-what more pretty things which we can or cannot remember at the moment, this apart from the fact that no UDC number is available for "calamities" in general.

From the twenty-five Uniterms properly fed into the system the three: damage, Japan, and typhoon—already would produce the report.

In using the Uniterm System

We find that our engineers have many times omitted a general keyword, or Uniterm. This was done sometimes even on purpose.

I shall give some instances.

1. Although some fifteen Uniterms had been allocated to a report entitled, "Intensity of radioactivity in rain", the general notion "fall-out" had been forgotten. So that a bibliography on this general subject did not mention this report.
2. A report entitled: "De-icing of trawlers" did not turn up when a bibliography was wanted on the subject "De-icing of ships", because the Uniterm *ship* had on purpose not been included for indexing this report.

   The purpose was not to burden the column-card for *ship* too heavily. It appeared that we had ten full cards for the term *ship,* amounting to about two thousand numbers in two years; far too many for an efficient search of course in column cards and a good reason to change our Uniterm column-card system into a punchcard peek-a-boo system, where the number of holes in each card does not affect the efficiency in a bad way. In the meantime the *purpose* was not correct.

3. We could not use, from the beginning, a so-called thesaurus in which not only synonyms but also related words and notions are listed (like radioactivity: fallout—rain—hail—snow—dust—particles, etc.), because such books did not exist.

   This means that today our Uniterms are better selected on both the indexing and the retrieving end than during the time that the test was running.

4. Concerning more Uniterm difficulties I should like to give another example.

   When we started our Uniterm-system we were splitting up most of the complex words, e.g.

   minesweeper and *minesweeping*.

   We now know that both words should indeed be divided into two, and that nouns like (*Sweeper*) and verbs (to sweep, sweeping, etc.) should have separate cards. However "*Anti-submarine*" should have *one* card apart from the card submarine. If not we would never be able to enter the modern: anti-submarine submarine into our file.

   The same thing applies for the notions: *air-to-air*; *air-to-ground*; *ground-to-air,* etc.; they all should have one card each.'

SURVEY OF INFORMATION/LIBRARY UNITS IN INDUSTRIAL AND COMMERCIAL ORGANIZATIONS

C. W. HANSON
Head of Aslib Research Department

35th Annual Conference, Brighton, September 1960

THIS survey* was undertaken in order to obtain quantitative data about special libraries and information sections in industrial and commercial organizations. We wanted to know, for instance, their number and size, how they were organized and staffed, how much they cost; the size and nature of their holdings; what procedures they adopted, what services they provided, and what use was made of those services.

Such information was needed for three good reasons: it would help Aslib to assess the needs of its members more accurately and to represent their interests more effectively; it would help organizations which were contemplating starting a library and information service by providing them with information about current practice; and it would enable existing information/library units to compare themselves with others.

The survey was planned and carried out personally by Dr Campbell in 1956–8. He found that there were at that time nearly five hundred industrial and commercial libraries in the UK, excluding those without any full-time staff. To collect information from all of them in the detail required would have been impracticable. He decided, therefore, to survey a sample. His sample numbered fifty-two (about 12 per cent) and was closely representative of the whole in terms of industry, geographical location, and type of organization—profit-making or other. He visited each organization personally, and wrote down on the spot their answers to 105 questions listed on a questionnaire form. These answers, which were later tabulated and analysed by the Research Department, form the raw material of the report which we are to discuss.

Dr Campbell is here and will speak later. I will therefore content myself with saying, as far as the collection of data is concerned, that I believe

a. that the sample is representative, and

b. that Dr Campbell obtained from the fifty-two organizations as much data, and as precise data, as anyone could have done.

There were, nevertheless, many gaps in it, and many of the figures given were not based upon records, but were the careful estimates of the head of the department. The analyses made from it are therefore sometimes crude, and subject to some uncertainty; but this uncertainty is in my view not great enough to invalidate the truth of the patterns disclosed in the various sections of the report.

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* *Survey of information/library units in industrial and commercial organizations,* Aslib 1960. 10*s* (12*s* 6*d* to non-members).

I will now try to summarise the main results given in the report, and to tell you why, and in what way, some of them are in my view significant and practically useful. Not all of them, of course. Some must perhaps be classed as mere 'curious information' until, as may well happen, they acquire significance when taken in conjunction with other data.

POSITION

Two-thirds of the units surveyed were formally responsible to a Head of Research or to a director, and most of the remainder to a senior technical officer. Nevertheless some of them, although occupying satisfactory positions on organization charts, did not appear to have sufficient authority, staff, or facilities to enable them to do their work properly. There was some evidence that the lack of status in an information/library unit was associated with lack of qualification or personality in the head of it. A live head is needed to make full use of opportunities formally offered by management.

STAFF

Heads

Rather over half of the units were headed by graduates or chartered librarians, graduates predominating. All the large units were headed by people thus qualified, and all except one of the units assessed by Dr Campbell as 'very good'. This suggests strongly that there is more to the job than 'having a flair for the work', which is sometimes thought to be an adequate qualification. The fact that a far higher percentage of women than of men heads were graduates I will for the moment class as 'curious information' and not pursue.

Supporting staff

One-third of the supporting staff had a qualification or part qualification. It showed a ratio of three women to one man. The ratio among attenders at Aslib junior introductory courses in recent years has been still higher. This seems to me to have serious implications for the future, particularly when taken in conjunction with the fact that the survey shows more men than women heads. I think it highly undesirable on grounds of public policy that information and library work—or any other work—should come to be thought of as mainly the preserve of women—or of men—thus limiting the scope for recruitment to one sex. We need all the good people we can get, whether they wear skirts or trousers; and they should all have equal opportunities of reaching the top.

The information/library staff in the fifty-two organizations totalled 318, the staff per unit ranging from one lone worker to twenty-one. The most common number was three. How many people did these workers serve? This is a key question because it is related to the more fundamental question: what is the optimum ratio of information/library staff to people served? We do not yet know the answer to this latter question—what is the *optimum* ratio? But the survey does provide an answer to the first question— what is the *current* ratio?

The answer is, about one to fifty-four—one information/library worker to fifty-four actual users of the service. That is the all-over average. More significant is the fact that in a quarter of the organizations the ratio was one to forty or less, and in four organizations one to twenty or less, the minimum figure being about one to ten. It seems safe to say, then, that in some circumstances it may pay to have one information/library worker to as few as ten people served. That is not an answer to the fundamental question—what is the optimum ratio—; but it may be a pointer towards one.

The number of people actually using an information service is, except in small research units, much less than the number formally entitled to use it, and than the total number of employees. The larger organizations tend to have higher percentages of manual and clerical workers whose work makes few calls upon information services. Consequently the ratios of information/library workers to total employees are much larger. Very roughly they are one to some hundreds for organizations with up to 10,000 employees; one to some thousands for those with 10,000 to 100,000; and one to some tens of thousands for the industrial giants.

I hope that this sort of information, rough as it is, will help managements to estimate, not what size of information/library staff they *ought* to have ideally, but at least what they will need if they are to put themselves on terms of apparent equality in this respect with other organizations of comparable size and type.

With the help of the Aslib Employment Register they will soon be able to find out how much this will cost them in salaries and wages. How much will they need to spend on the purchase of books and journals? The answer is probably about one-third of the salary and wage cost. For the organizations providing data, expenditure on documents averaged about a third of the expenditure on wages and salaries. One might say that it cost three times as much to make use of the documents as to buy them. This three-to-one ratio, which differs greatly from the corresponding ratio in public libraries, is important, and both heads of units and managements should be aware of it and study its implications. One minor point is that it is nonsensical for managements to try to exercise close control over the details of purchasing.

LIBRARY HOLDINGS

I will leave you to derive what benefit you may, at your leisure, from the data given about library accommodation, and pass on to consideration of library holdings.

We all know that periodicals are important in a special library. The figures given in the report show how important. The median number of periodical titles taken by the fifty-two organizations was 210. Two-thirds took between one hundred and three hundred. Only two of them took less than fifty and only five of them less than a hundred. Study of the data leads me to believe that the number of periodical titles commonly found to give adequate coverage of a subject is of the same order—a few hundreds—irrespective of subject. Small libraries cannot scan so many, and so take fewer; but large and wealthy ones seldom take very many more. This data, considered in conjunction with data from other surveys, provides, I think, something as near to established knowledge in this matter as we can hope to get.

About one in every twelve of the periodical titles taken was in a foreign language, and about one in ten was an abstracting periodical. Taken together these figures when analysed showed that all the reporting organizations had provided themselves with some means of following at least some foreign work.

I shall not comment upon the sections of the report dealing with the binding, storage and retention or disposal of periodicals; I simply draw your attention to them. Nor shall I comment upon the rather scrappy information we obtained about other types of library materials, except to point out that only in six organizations did the library hold correspondence other than its own. This may be important. For, I think, historical reasons, a firm's correspondence and other internally generated documents are usually handled and stored by a general office or a registry; but the problems associated with them are similar to those met with in libraries, and the information contained in them would often be useful in the library. I leave this thought with you. In passing may I draw the attention of publishers in particular to Table 30 which may be of some interest to them.

CLASSIFICATION AND INDEXING

The tables in the report showing the systems of classification and indexing used by the sampled organizations tell their own story, and I shall not attempt to comment upon the details. I want to raise one general point, however, which is relevant to other discussions at this conference. What determines the choice of one system rather than another? The pattern in the UK was one half UDC, the other half a variety of home-made systems. I have no comparable data from the USA, but I am fairly sure that a survey there would reveal a very different pattern. The UDC would hardly appear. Dewey, Library of Congress and co-ordinate systems such as Uniterm probably would. Yet, broadly speaking, the systems are being applied in both countries to the same documents, for the same purposes. Why these differences between countries? And why the differences between like organizations in the same country? The main reason, I suspect, is lack of the kind of knowledge which would enable a choice to be made on a rational basis—lack, in fact, of the kind of data which the Cranfield investigation is designed to provide.

CIRCULATION OF PERIODICALS

I shall not discuss the display and circulation of periodicals beyond pointing out that about half the reporting organizations operated selective circulation: that is to say, individual issues of periodicals were circulated to people to whom the contents of that particular issue would be of interest. As compared with the automatic circulation of each issue to the same list of people, this represents a relatively advanced form of information work, demanding skilled selection by the information/library staff.

LIBRARY LOANS

The figures given in the report for the numbers of loans provide only a partial measurement of the use made of the libraries in the sample, partly because a surprising number of libraries could provide no data, but mainly because an unknown amount of consultation in the library takes place, not resulting in recorded loans. To obtain a valid measurement of the full use made of a library, we shall have to employ other criteria in addition to the number of recorded loans.

There was a considerable measure of agreement among reporting libraries on the period of loan, and very little upon the types of loan record kept. The loan period allowed by over half the sample was two weeks; but twenty-three different systems of recording loans were in use, seven being the largest number of organizations using any one system.

The data obtained about interlibrary borrowing and lending is incomplete, because half the libraries had no records. But unless the half sample is grossly unrepresentative it suggests

a. that libraries need to borrow from outside, however large and well-selected their holdings;
b. that borrowings from outside average about 12 per cent of the number of loans from stock;
c. that most industrial and commercial libraries borrowed from other libraries much more than they lent to other libraries;
d. that very few of the documents sought were never obtained.

Our current investigation devoted entirely to interlibrary borrowing, about which I spoke earlier in the Conference, will provide a great deal of more detailed information—in particular about the items borrowed, the time taken to obtain them, and the cost of borrowing.

REFERENCE WORK

So far I have been mainly discussing matters about which most libraries were able to give quantitative data—numbers of documents, numbers of people, costs and so on. On the whole they were not able to give this sort of information about reference work or subject inquiries. The information obtained about this advanced form of information work was meagre, and difficult to interpret. The most one can say with certainty is

a. that all the units answered some subject inquiries;
b. that about half answered some inquiries involving more than half a man/day's work, and compiled some bibliographies;
c. that about half recorded some of the answers given.

It seems clear that few libraries keep records either of the number of inquiries handled, or of their nature. There is no reason why they should do so if they find such records unnecessary: certainly the last thing Aslib wishes to do is to persuade its members to keep records they do not want. If we need to know, as I think we do, more about the volume and nature of the subject inquiry work done by information/library units, we must devise new techniques for finding out.

Nearly every information/library unit compiled and issued some kind of publication as one means of disseminating information to its clients. Most of these publications contained selected literature references, usually with abstracts, and lists of books added to the library. Most of them were issued monthly, in less than five hundred copies.

The significance of this is twofold. First, it means that the information/library worker, if he is to do his job fully, should have some writing ability and some knowledge of the techniques of compilation and editing. Second, it means that he should have some knowledge of reproduction processes, particularly of those suitable for producing relatively small numbers of copies.

CONCLUSION

I am sure you will all agree, and regard these statements as platitudinous. I do not apologise, however, for drawing your attention to things you already know because I have observed that until common knowledge is backed by factual data, however meagre, we often fail to believe in it sufficiently to act upon it.

I know that much of the data given in this report, although not all of it, merely confirms and adds precision to the existing opinions of well-informed people. I believe, however, that in providing a confirmatory factual basis for such opinions it serves a useful purpose.

Speaking for myself, I can say that the information contained in the report has been of substantial use to me when discussing a variety of problems and plans brought to us by our members. I hope it has been of use to them, and will be of use to you.

After living with this material for a long time, I can say with truth that I think the survey was worth making, and that the results are worth having. If Dr Campbell had not made this survey, I think I should have had to make a similar one.

SURVEY OF LIBRARY PROVISION IN THE AIRCRAFT AND GUIDED WEAPON INDUSTRY

T. M. AITCHISON
English Electric Aviation Ltd, Guided Weapons Division

35th Annual Conference, Brighton, 30th September 1960

IN June 1959 a questionnaire, which is printed on page 400, was sent to all members of the Aslib Aeronautical Group other than overseas members, and public, university and (general) college libraries. Of the sixty-nine questionnaires sent out, replies to forty-nine were received.

The forty-nine organizations which replied to the questionnaire form the greater part of the aircraft and guided weapon industry: only three large aircraft manufacturers are not included.

The results are tabulated on pages 398–9.

Classification of organizations

The organizations replying have been grouped according to their main activity into the following classes:

1. Aircraft manufacture } i.e. development and manufacture of
2. Guided weapon manufacture } complete aircraft or weapon.
3. Power plant manufacture, i.e. aircraft and guided weapon (G.W.) engines, motors, etc.
4. Electronic apparatus manufacture, i.e. aircraft and guided weapon guidance, radar systems, etc.
5. Manufacture of aircraft and guided weapon accessories, i.e. of items and materials used mainly in or with aircraft and guided weapons.
6. General engineering. This class comprises those firms who, while being sufficiently interested in aeronautics to be members of the Group, are not solely or even mainly concerned with it. This class thus provides a suitable comparison since the members are distinct from those specializing in aircraft or guided weapons but are sufficiently similar to be comparable.
7. Government Research, i.e. government research establishments dealing solely or mainly with aeronautics.

Answers omitted

It was found necessary to omit answers to three of the questions:

1. Annual expenditure on research and development. It had been hoped to use this as a basis of comparison, but very few replies gave this figure.

			MANUFACTURE						
			Aircraft	*Guided Weapon*	*Power Plant*	*Electronic Apparatus*	*Aircraft and G.W. Accessories*	*General Engineering*	*Government Research*
Number of Books	*a.* Per technical staff member	Min.	0.3	0.4	0.7	1.6	0.5	1.7	3.0
		Av.	1.4 (8)	1.9 (4)	1.8 (3)	3.5 (3)	4.9 (8)	5.8 (6)	4.3 (5)
		Max.	5.0	2.9	17.5	17.4	16.7	23.9	62.5
	b. Per graduate and HNC staff member	Min.	1.4	1.3			2.4	7.8	7.5
		Av.	2.5 (5)	8.7 (3)	(2.0)	(6.3)	4.9 (3)	14.6 (4)	9.1 (5)
		Max.	5.2	11.3			19.3	20.0	66.6
Annual Book Expenditure	*a.* Per technical staff member	Min.	£0. 0.11	£0. 8. 6	£0. 3. 5	£0. 3. 4	£0.13. 4	£0.16. 8	£0.12. 0
		Av.	0. 5. 8 (6)	0.12.0 (3)	0.11. 6 (3)	0.14. 7 (2)	0.16.11 (5)	1.17. 6 (5)	1. 0. 1 (5)
		Max.	0.12. 2	4. 5. 8	7.10. 0	1.13. 0	2. 8. 4	6. 0. 0	5.12. 6
	b. Per graduate and HNC staff member	Min.	0. 1. 5	2. 5. 2			1. 5. 8	4. 8. 0	1.10. 0
		Av.	0.11.11 (4)	2.10. 5 (2)	(0. 8. 0)	(3.15. 0)	1.18. 3	5. 0. 7 (4)	2. 2. 3 (5)
		Max.	1. 8. 6	8.11. 4			9. 1.10	7. 5.10	6. 0.0
Number of Periodicals (titles) Taken	*a.* Per technical staff member	Min.	0.1	0.05	0.1	0.2	0.2	0.4	0.1
		Av.	0.2 (9)	0.1 (4)	0.2 (3)	0.2 (3)	0.3 (8)	0.7 (6)	0.2 (5)
		Max.	0.4	1.4	0.7	0.8	1.0	6.0	1.0
	b. Per graduate and HNC staff member	Min.	0.2	0.2			0.3	1.0	0.3
		Av.	0.3 (5)	0.5 (3)	(0.3)	(0.8)	0.6 (3)	1.9 (4)	0.5 (5)
		Max.	0.6	2.7			2.3	6.0	1.2
Annual Periodical Expenditure	*a.* Per technical staff member	Min.	£0. 2. 6	£0. 9. 5	£0. 7. 0	£1. 0. 0	£0.10. 0	£1. 0. 0	£0.12. 0
		Av.	0.11. 8 (6)	0.12. 8 (3)	0.13.10 (3)	1. 7. 6 (2)	1. 4. 3 (7)	2.17.10 (6)	0.19. 3 (5)
		Max.	1.10. 0	2.10. 0	2.10. 0	2. 0. 0	4. 5. 6	12. 0. 0	3.13. 2
	b. Per graduate and HNC staff member	Min.	0.12. 0	2.11. 7			0.18. 0	4. 3. 4	1.10. 0
		Av.	0.15.11 (4)	2.14. 2 (2)	(0.12. 0)	(4.10. 0)	2. 4. 0 (3)	7. 9. 7 (4)	2. 0. 6 (5)
		Max.	0.18. 0	5. 0. 0			9. 1.10	12. 0. 0	3.14. 9

Annual Book and Periodical Expenditure	*a.* Per technical staff member	Min.	0. 3. 9	0.17.11	0.11. 8	1. 3. 4	1. 1. 0	1.16. 8	1. 4. 0
		Av.	0.17. 4 (6)	1. 4. 8 (3)	1. 5. 4 (3)	2. 2. 1 (2)	2. 1. 5 (5)	4.12. 8 (5)	1.19. 4 (5)
		Max.	2. 0. 0	6.15. 8	10. 0. 0	3.13. 0	6.13.10	18. 0. 0	7. 2. 6
	b. Per graduate and HNC staff member	Min.	0.19. 5	4.16. 9	(1. 0. 0)	(8. 5. 0)	1.18. 0	11. 0. 0	3. 0. 0
		Av.	1.13. 4 (4)	5. 6. 1 (2)			4. 2. 4 (3)	12.11. 5 (4)	4. 2. 9 (5)
		Max.	2. 5. 7	13.11. 4			18. 3. 8	18. 0. 0	7.13. 0
Number of external and internal reports	*a.* Per technical staff member	Min.	24	2	15	0.3	1	13	25
		Av.	38 (7)	8 (4)	21 (3)	0.3 (2)	13 (6)	16 (4)	88 (5)
		Max.	72	10	25	0.3	37	91	3125
	b. Per graduate and HNC staff member	Min.	42	4	(26)	(0.8)	14	15	63
		Av.	94 (4)	34 (3)			20 (3)	39 (3)	184 (5)
		Max.	286	35			81	72	3333
Library staff	*a.* Technical staff per library staff member	Min.	60	18	50	50	60	5	27
		Av.	133 (9)	191 (4)	93 (3)	88 (2)	135 (7)	40 (6)	123 (5)
		Max.	438	367	106	113	300	150	250
	b. Graduate and HNC staff per library staff member	Min.	28	9	(63)	(50)	22	5	25
		Av.	71 (5)	48 (3)			67 (3)	17 (4)	59 (5)
		Max.	250	69			100	25	100
Library area (sq. ft.)	*a.* Per technical staff member	Min.	0.6	0.5	0.8	0.3	0.7	1.0	1.2
		Av.	1.4 (9)	0.8 (4)	1.3 (3)	0.9 (3)	1.86 (8)	2.2 (6)	2.7 (5)
		Max.	2.3	4.3	6.3	4.0	8.9	10.5	25.0
	b. Per graduate and HNC staff member	Min.	1.1	2.3	(2.0)	(2.4)	2.2	4.0	3.0
		Av.	2.8 (5)	2.9 (3)			2.8 (3)	5.7 (4)	5.8 (5)
		Max.	6.8	8.6			8.9	10.5	26.7
Readers' seats	*a.* Technical staff per seat	Min.	63	35	50	38	15	11	7
		Av.	155 (9)	140 (3)	136 (2)	40 (3)	70 (7)	56 (6)	54 (5)
		Max.	820	157	170	42	300	150	100
	b. Graduate and HNC staff per seat	Min.	27	18	(100)	(17)	22	13	6
		Av.	95 (5)	28 (2)			57 (3)	26 (4)	23 (5)
		Max.	350	30			83	41	40

2. Number of annual volumes of periodicals held. This question was not clearly enough phrased for the answers to be used.
3. Specifications, standards, etc.: numbers held. A definite figure was given in very few replies.

In addition, the replies from research associations, college, society, and government headquarters organizations have been omitted since they are too specialized to make any comparison worthwhile.

The Tables

To facilitate comparison the replies have been related to: *a,* the number of technical staff in the organization, and *b,* the number of graduate staff and staff with Higher National Certificate in the organization.

For each class the minimum, average, and maximum figures are given, together with (in brackets) the number of members in the class. Where the class has only one member, the figure is given in brackets.

ASLIB AERO GROUP—QUESTIONNAIRE

(Please answer what you can, however little)

1. Number of technical staff served by library . If known, number of graduate and Higher National Certificate (HNC) Staff .
2. Annual expenditure on research and development by organization, if known .
3. Does your library work to a fixed budget? Yes/No.
4. Holdings
   Books: Number of volumes . Annual expenditure, if known .
   Periodicals: Number of titles currently received . Annual expenditure, if known .
   Number of annual volumes of periodicals held .
   Reports: Number of external reports held . Number of internal reports held .
   Specifications, standards, A.P.'s, etc.: Number held .
5. Staff
   Total staff . Number of qualified* staff . (* i.e. with academic, technical or professional qualifications)
6. Accommodation
   Total floor area occupied by library sq. ft. Number of seats available for readers .
7. Do any other libraries serve the staff mentioned in Question 1? .

SUPPLEMENTARY NOTE

The paper is published here as preprinted. The following additional information was given by the author at the meeting itself.

'Mr Hanson has given you an account of a general survey carried out on a sample representing all the libraries and information services which are members of Aslib. I have been asked to tell you, in ten minutes or so, something of a survey carried out with the Aslib Aeronautical Group.

You have, in the preprint, details of the survey and a summary of the results: I propose to round out the story and make some comparisons between the two surveys.

At the time of our survey, the Group was preparing a memorandum for submission to the Aeronautical Research Council on library and information services in the aircraft and guided weapon industry. As you might expect, our memorandum stressed the inadequacy of these services; in addition we were of the opinion that they compared badly with those in similar industries. It was to change this expression of opinion into a statement of fact that we conducted our survey. You will see from the table that, without the need for any "adjustment", the results fulfilled all our hopes.

We divided up the co-operating organizations into a number of classes to show (I think with surprising consistency) that library provision improves as one passes from the aircraft and guided-weapon manufacturing industry, through ancillary industries, to general engineering.

As well as using the results in our memorandum we sent copies to all who had contributed to the survey. I am happy to say that there is evidence that the survey has already produced results. The mere sight of the figures seems to have inspired some librarians to press, once again, and with renewed vigour, for more money, staff and space, and has shamed some managements into granting at least some of the requests. So I think that a similar survey carried out now, a year later, would produce a less gloomy picture.

The main difference between our survey and the one Mr Hanson has described is that ours was done for a specific purpose, was concentrated in one industry, and sought to answer a small number of questions (what size stock, how much money, how many staff and what space). Because it was so limited we were able to concentrate in detail on such matters as expenditure.

Another difference in the two surveys arises from the limited time we had available. Our memorandum was to be submitted within two or three months, so that everything connected with the survey had to be done in great haste. This led us to take at their face value all the answers we received (there was no time nor opportunity to discuss them with the co-operating librarians).

Also, because of our haste, we did not conduct a pilot survey. If we had, we should have had a warning that one of our questions was not clear, and that we were unlikely to get any or usable answers to two others. (Incidentally there are few worse experiences than to have completed questionnaires pouring in, showing that a question you thought too simple for words has produced a wide range of replies, most of which you know must be wrong.)

The last main difference between the two surveys is that we related all the answers to *a*, the number of technical staff in the organization, and *b*, the number of staff possessing a degree or Higher National Certificate. We felt these gave us reasonable bases for comparison. We had hoped, also, to relate our figures to the research and development expenditure of the organization, but we did not receive enough answers on R and D expenditure to make this possible.

On the actual figures produced by the two surveys, I am afraid only a limited comparison will be possible—and most of that you will have to take on trust.

You see, the Aero survey details had to be sent to the printers for inclusion in the preprint before the report of the general survey had been issued, so it was not possible to convert our figures and have them preprinted in the form of the general survey. However, Mr Hanson has kindly provided me with some figures which do not appear in the printed report, and I have done some homework on our figures.

There are four sections where a comparison is possible:

1. *Number of staff per information or library worker*

(Table 7 of the general survey and in the third section of the Aero survey: see page 399.)

Mr Hanson tells me that the average figure in his survey for the number of staff (both technical and non-technical) per information or library worker is 113. If we assume that 20 per cent of the staff will be non-technical, the figure for technical staff per information or library worker is then ninety. Comparing this figure with our results, you will see that it is equivalent to the figure for the power plant and electronic apparatus classes, is more than twice that of general engineering, but is much less than those for the other classes, the G.W. class being worst of all.

2. *Expenditure*

(Discussed generally on pages 12 and 13 of the report of the general survey; in the first section of the Aero Survey: see page 399.)

Mr Hanson gives me, for the average expenditure, in the general survey, on books and periodicals per member of staff (i.e. all staff) the figure of £1 12*s*, the range being from 3*s* to £18. This £1 12*s* can be compared with our figures for expenditure per technical staff member, which range from 17*s* 4*d* for aircraft manufacturers to £4 12*s* 8*d* for general engineering. So, even before we adjust the general survey's figures to those for technical staff, it is obvious that the aircraft and guided weapon industry figures are low.

This may be explained (but not, I hasten to add, excused) by the greater value placed in our industry on unpublished reports. These are more important than books and periodicals to many of our library users (particularly aerodynamicists).

3. *Accommodation*

(This is given in Table 12 of the general survey and as "Library Area" in the second-last section of my table on page 399.)

Let me say right away that I do not think much of the basis in the general survey, that is, per information or library worker. After all, the accommodation is provided for the library user and the stock, rather than for the library staff. Relating the accommodation to the number of people who might use it seems much more sensible.

However, I have converted our results and got the following figures to compare with the general survey's median figure of 200 sq. ft.: Aircraft, 167; G.W., 142; Power Plant, 121; Electronic Apparatus, 200; Accessories, 279; General Engineering, 93; and Government Research, 337.

You will notice that our general engineering class, which comprises some very fine libraries, with good collections exploited by large library staffs, comes off extremely badly through this relating of accommodation to library staff.

4. *Number of periodical titles taken*

(General survey, Table 13.)

I am afraid I have not given you the actual number of periodicals taken on average by each class. If you would like to compare them with the general survey's average of 234 and median of 210 the figures are: Aircraft, 85; G.W. 112; Power Plant, 108; Electronic Apparatus, 300; Accessories, 108; General Engineering, 305; and Government Research 261.

Once again the aircraft and guided weapon industry seems below standard. As in the general survey, we found a tendency for the average number of periodicals taken to increase with the size of the library and information staff.

That completes the comparison. In conclusion I should just like to make two points.

No set of results from a survey will ever produce a perfectly true picture—we can all think of errors or wrong interpretations that will occur. However, the method used by Dr Campbell in the general survey, of a personal interview at which the answers are obtained, will reduce the inconsistencies to a minimum and I would go so far as to suggest that we should all be wary of the results of any future survey conducted in any other way.

Finally, let me remind you that all the real work of a survey is done not by the people who produce the final results, but by the individuals who go to the trouble (often a lot of trouble) to answer the questions they are sent. It is quite wonderful, as we found with the Aero Group survey, what a helpful, co-operative lot of people we are!'

DISCUSSION

The discussion was opened by DR D. J. CAMPBELL (Leonard Hill Technical Group), who pointed out that all the material collected in the survey had been obtained by personal interview. He emphasized the importance of this, because of great differences in interpretation of written questions; for instance, several units, asked if they used UDC, said 'yes', but it was found that they used decimal schemes of their own. He had had in consequence to develop a technique of 'tactful cross-examination'.

Visits were deliberately confined to half a day and this limited the scope of the whole survey. Dr Campbell expressed his personal thanks to the organizations and the staffs of units participating. He also praised Mr Hanson for the report and analysis and said he hoped it would be possible to extract and analyse more of the data collected.

Commenting on the report, he said he thought that selective circulation was little used and mainly for marginal periodicals. He differed with Mr Hanson's interpretations only in thinking that there was a reasonable correlation between numbers of information/library workers and total staff, bearing in mind that in some organizations 'staff' included clerical workers.

The question of age of library had not been asked because no common denominator had been found to base the question on. Some units had grown gradually from a shelf-full of books; others had been established with full-time heads and had later lapsed temporarily into comparative neglect.

The survey had been originally intended to cover all special libraries, but this was soon realized to be impracticable in the time available. The difficulties of selection, especially of provincial units, had been considerable, and owing to lack of time and transport difficulties some of the provincial visits had been rather short. The North-West and Midlands were over-represented in the sample because he had written to more bodies than he expected to agree to participate and practically all had agreed. Having agreed, they could hardly be excluded.

MRS W. I. VEASEY (Natural Rubber Producers' Research Association) said that when Librarian to the Motor Industry Research Association she had conducted a survey of library services within the automobile engineering industry. This had been undertaken primarily to assist the work of the MIRA library but the results obtained had differed so considerably from those produced by the Aslib survey that even allowing for differences of method they were worthy of comment and comparison.

There were at least ninety-six libraries or information units within the industry, which indicated that the Aslib total of 486* for all industries excluded a large number of libraries and librarians who were not members of either Aslib or the Library Association. It was reasonable to assume that these excluded libraries had lower standards of professional service than the Aslib selected sample, thus contributing to the poor results obtained, and to some extent invalidating the Aslib survey as an indication of national averages. Of the ninety-six libraries within the automobile engineering industry she had visited twenty-one and the following comparisons with the Aslib survey were made on the basis of these. The libraries varied very much in size and scope but the emphasis was necessarily on small units because very few large ones existed: she had discovered also that the size of the parent firm bore no relationship whatsoever to the size of the unit, some of the giant firms having the most inadequate, or in some cases non-existent, services.

COMPARISON OF SURVEYS

	Aslib	MIRA
Heads of Unit graduates or chartered librarians	30 out of 52 58% †(table 9)	7 out of 21 33%
Libraries taking no foreign-language periodicals	6 out of 48 18% †(table 16)	10 out of 21 48%
Units issuing some form of serial publication	42 out of 52 82% †(p. 40)	6 out of 21 29%
Subjective assessment of quality Units classed as 'fairly good' or 'poor'	10 out of 52 19% †(table 58)	13 out of 21 64%

These comparisons demonstrated how very much lower the standards of information/library units within automobile engineering were than the national averages as revealed by the Aslib survey. In other directions this numerical comparison had not been possible but there were many indications that other services were equally poor, for example, very few libraries had any systematic method of scanning bibliographies, etc., for stock selection: the majority did not take, and in some cases had never heard of, the bibliographies listed in Table 30 of the Aslib survey, although admittedly this table did not include journals or booksellers' lists which were probably more important sources of information on new publications.

The widely differing results between the two surveys, even after due allowance was made for variants of method and sample, pointed to two conclusions: the first obvious conclusion was that library services could vary tremendously within given industries, and secondly that there were many obscure service points which should be considered as libraries, however far below professional standards their activities might fall. These libraries had full-time staff and if the management called them engineering research libraries they should be considered as engineering research libraries, even though the staff might be recruited from a variety of other departments and have little or no knowledge of library procedures, techniques, services, and sources. Mrs Veasey had met senior engineers and executives who were unconcerned about the inadequacies of their libraries and who had no knowledge of the possibilities of a better service. This led to the inescapable conclusion that, particularly within specific industries like automobile engineering, it would be necessary to educate the managements before any general improvement in library services was possible.

MR W. R. MOSS (Petrochemicals Ltd) said he would like to challenge the figures in Table 11 of the report 'expenditure on library documents as a percentage of expenditure on salaries'. Most special libraries were concerned with research and development. The cost of producing reports on this work was very high and would affect the ratio of salaries to cost of material. He felt that this should have been taken into consideration and included in the survey.

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* *Survey of information/library units, p. 4.*

† Op. cit.

DR CAMPBELL said he agreed with most of what Mrs Veasey had said, but pointed out that the fifty-two units included in the Aslib survey had been selected for quality — there had been no point in visiting inefficient units—and were not confined to one industry. Differences were to be expected in the results of the two surveys.

Engineering information units were generally less efficient than chemical ones, because chemists were in far closer touch with their literature, and at least the older chemists could read one or more foreign languages. He had not suggested that 486 was the total number of information/library units in the country, but it represented the total from which the sample had been selected. The survey was not necessarily limited to Aslib members, but was planned to show conditions in industrial and commercial information/library units as a whole.

Dr Campbell said he thought Mr Moss had exaggerated the importance of reports since they were seldom produced, or even reproduced, in the units visited, and it was not uncommon to find them held in other departments. It had been difficult to frame questions on reports which would yield useful information. The survey had to be limited to the work of the units visited. Information work was often done in other departments, e.g. public relations.

MR HANSON, referring to Mr Aitchison's comment on relating accommodation to numbers of library staff, said he agreed that a more enlightened presentation of the figures might be preferred but the results did, in fact, show the attitude of many libraries to area of accommodation. In a number of cases little or no provision was made for library users. The simple figures, given in Table 12, probably represented some of the most useful results of the survey.

MR AGARD EVANS (Ministry of Works) suggested that the ratio of information/library staff to users was affected by the considerable amount of basic library work which had to be done irrespective of the number of users. The amount of basic work, and hence the number of staff, might be represented by $K + an$, where K was a constant and n the number of people served. It was possible that K would, in some circumstances, be greater than an.

Mr Hanson had mentioned that the number of recorded loans could not be taken as an indication of library activity. In the Ministry of Works libraries records were made two days each month of the numbers of loans, visitors, minor inquiries, and major inquiries. These statistics formed a useful measure of the development of the libraries concerned.

Comments subsequently received

MR A. H. HOLLOWAY (Royal Naval Scientific Service) writes:

Some of Dr Campbell's remarks at the 1960 Aslib Conference about his monumental Survey of Information/Library Units seem to call for comment as they have a considerable bearing on the use of the published report.

In the first place, Dr Campbell's remark that he knew that there were a number of units not included in his parent population does not agree with the reasonably exhaustive procedure described in the report and one wonders why they were not considered. The criterion that only units with a full-time staff should be included in the sample is a reasonable one, but the neglect of some of those thus qualified and worse, the dismissal of some of the returns, on the grounds that they were not of a sufficiently high standard serves only to make the results unrepresentative and to decrease their value for comparison and for generalized conclusions.

On one other point, I can assure Dr Campbell that the value of unpublished reports varies enormously from industry to industry, and that in some fields at least they are much more important than the published work, whether in books or periodicals.

DR D. J. CAMPBELL replies:

It was obvious that there must be other commercial and industrial library/information units with a full-time staff than the 486 from which the sample used in the Aslib survey was drawn. It was quite another matter to find them in the time available. Probably most of the people in charge of these units are relatively untrained, and if they take no part in professional activities and are not in touch with Aslib, the LA, the NCL or similar bodies, how can the units be traced? Even if traced, would they have co-operated in the survey?

Mr Holloway appears to think that no attempt should have been made to select the sample for quality. I disagree. We wanted a picture of good practice, which is much more useful and interesting than a picture of average practice. Bad work is done in all fields but there is no point in studying it. There were practical difficulties about adopting the course Mr Holloway prefers, but I think I have said enough.

I quite realise that in some industries, chiefly defence industries, unpublished reports are vital. One must distinguish between an organization's own reports (internal) and other unpublished (external) reports. My memory of the visits (made in 1956–8) is inevitably fading but I do not remember that great importance was attached to external reports in many of the units visited. There was often a tendency to regard the unit as primarily concerned with published material, and internal reports were sometimes kept (and indexed, if at all) in other departments such as the Chief Engineer's department or the office of the Technical Director.

Letters to the Editor

ASLIB REGISTER OF SPECIALIST TRANSLATORS

Dear Madam,

The purpose of my letter was to prompt Aslib to dispel the unfortunate impression that admission to the Aslib Register is governed by considerations other than those of technical and linguistic competence.

Mr Paterson's reply is not helpful.

1. It seems that a competent translator will be refused admission if there is 'a sufficient number of translators' on the Register 'to meet the anticipated demand from Aslib members' for any given combination of language/subject knowledge.

Selection is, therefore, arbitrary.

2. 'No translator has at any time gained admission to the Register without fully satisfying Aslib of his linguistic and technical competence'.

Is Aslib qualified to judge linguistic and technical competence? The fact that a substantial number of the translators on the Register cannot command professional fees for their services suggests otherwise.

Yours faithfully,

L. J. Lawrence,
103 Edenfield Gardens,
Worcester Park,
Surrey.

4th October 1960.

Mr Paterson replies:

On Mr Lawrence's first point, I would take issue on the use of the word 'arbitrary'. The principles of selection are those which would be applied in any organization requiring personnel to meet an anticipated volume of work. What organization would deliberately employ eight people to do what three people could easily manage? I stress again that the Aslib Register exists for the sole purpose of assisting Aslib members with the translation of foreign scientific and technical material, and admission will continue to be governed by the known volume of demand for particular combinations of language/subject knowledge.

On the second point, I stated in my article that 'Aslib is not in a position to judge the quality of translations in a multiplicity of languages and subjects' and acknowledged our reliance on the opinions of referees. The system is admittedly not perfect, but has worked well in practice. Mr Lawrence's use of the words 'cannot' and 'professional' in his final sentence entirely begs the question.

It is regretted that correspondence relating to the Aslib Index of Specialist Translators must now cease: Editor.

TRANSLATORS' PROBLEMS

Dear Madam,

Referring to Mr Hanson's letter in the September issue of *Aslib Proceedings*, may I offer a few helpful suggestions regarding the word count from Japanese of scientific and technical papers.

Mr Hanson quotes a memorandum of the Institute of Linguists that, 'one character could be assumed to equal one and a half words or two words . . .'. I feel sure that this can only refer to literary work. To give an example. The single character for the word 'rust' is normally translated as 'mature elegance'. In scientific or technical translations, except in the case of abbreviations where the mere translation into English is meaningless, the opposite applies. For instance, the word 'electronics' is represented by three characters, 'physicist' by four, 'plasticiser' by three, and occasionally, such as in the word 'photomicrography', this is represented by six Japanese characters. But generally the number of characters is two, three or four per English word, making an average of three.

As to the omission of phonetic symbols, in conjunction with the above, which was suggested in the memorandum, I do not think this is feasible in view of the policy of the post-war Japanese Ministry of Education which aims to cut down the number of characters to 1,850 and also to simplify them or use a phonetic symbol instead. Thus, the use of phonetic symbols will increase rather than decrease, and should therefore be taken into consideration in the word count.

During the course of translating scientific and technical papers from Japanese, I have studied the question of arriving at an estimate of the cost of translating a paper. This is very difficult, but after trial and error methods, I find that if I assume that three characters are equal to one English word, a rough estimate of the cost can be ascertained, although occasionally some papers are very deceiving. It is my ambition to be able to estimate within a hundred words, and occasionally I am able to do this, but more study is necessary for a really reliable estimation of the cost.

The basis on which I work out an estimate is as follows: Count the number of characters, including spaces, per line of the Japanese text. Find the number of lines per full page. This gives the number of characters per full page. Measure the column length in inches. Then measure the whole text in inches, making the appropriate reductions for the spaces occupied by Figures, Tables, etc. This gives the total number of inches. I convert this into English words by first dividing the total number of inches for the whole paper by the number of inches per page. Multiply this by the estimated number of characters per page, and then divide the result by three (three characters per English word). This gives the number of English words. With the rate quoted per thousand words, which I have found convenient, the estimated cost of the translation can be ascertained.

I have worked out the above system, but only as a guide, as it is far from perfect. I think that the only logical approach to the question would be a statistical study of it.

Yours sincerely,

D. JACKSON,
24 Lockington Road,
London, S.W.3.

7th October 1960.

LETTERS TO EDITOR

THE FUSED PARTICIPLE

Dear Madam,

Mr Revie will have been complimented already on his valuable paper, *Some Aspects of Technical Editing* but it can never be too late to be grateful for attention drawn to the careless grammar so often inflicted on the scientific reader. It is fairly obvious that few writers, including the 'literary', care for grammatical propriety mainly, I suppose, because either they do not know it or they do not realize that without it serious misinterpretations are possible.

One of the commonest loose constructions now in use is the fused participle; it is accepted by some authorities as quite proper, radio and television announcers use it often, and now it has appeared in the better newspapers. The popularity of this construction may spring from its value in antithetic ambiguity to politicians, newspaper writers and the like but it can have no place in precise writing.

Fused participle is of course a euphemism for confused use of the participle and gerund the result of which may be seen in the following single example. 'Comment has been made on the difficulties of small firms retaining first-class technical writers'. This means that small firms able to retain good writers have difficulties whereas the author's intention was to draw attention to the difficulties which plague the firms who, because they are small, are unable to retain the writers.

H. W. Fowler in his *Modern English Usage* wrote that 'every just man who will abstain from the fused participle (as most good writers in fact do, though negative evidence is naturally hard to procure) retards the progress of corruption'. The article 'Fused Participle' in this book is so persuasive and thorough that it goes a long way to ensuring 'that the reader may leave this disquisition sick to death, as he should be, of the fused participle'.

Yours faithfully,

W. J. Murison,
West Riding County Library,
George Street, Wakefield,
Yorks.

7th October 1960.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

Books and Pamphlets

AMERICAN ASSOCIATION OF LAW LIBRARIES
Cutting costs in acquisitions and cataloging: proceedings [of] A.A.L.L. Institute for Law Librarians, Grossinger, New York, June 15–19, 1959, directed by Marian G. Gallagher. South Hackensack, (N.J.), F. B. Rothman & Co., for the Association, 1960. viii, 67 pp. (AALL Publications Series, no. 1.) $4.50.

ANDERSON, WALTER E.
German for the technologist. London, Harrap, 1960. 293 pp. 16*s*.

*ANNUAIRE de la presse française et étrangère et du monde politique . . . 1960. 74th ed. Paris, l'Annuaire, 1960. 1688 pp.

*ASLIB
Survey of information/library units in industrial and commercial organizations: results of a survey of the information/library units of a sample comprising 52 British industrial and commercial organizations; survey carried out by D. J. Campbell, results analysed and report prepared by C. W. Hanson. London, Aslib, 1960. [vi], 42, vi pp. tables. 12*s* 6*d* (10*s* to members).

BAR-HILLEL, YEHOSHUA
Some theoretical aspects of the mechanization of literature searching. Washington, Office of Technical Services, 1960. iv, 74 pp. bibliog. (Technical report no. 3. Work done under contract no. N62558–2214 of the U.S. Office of Naval Research and under grant by U.S. National Science Foundation.) $2.50.

BIRD, VIOLA, *and* PEARCE, STANLEY
Order procedures: a manual, by Viola Bird and Stanley Pearce assisted by Ruth Ault, *and* Discussion, by Pauline G. Wildman. South Hackensack (N.J.), F. B. Rothman & Co., for the American Association of Law Libraries, 1960. [5], 66 pp. bibliog. (AALL Publications Series, no. 2.) $4.50.

BORGWARDT, S.
Library display. Johannesburg, Witwatersrand University Press. 1960. vi, 190 pp. plates, diagrs. 40*s*.

BRITISH ASSOCIATION FOR COMMERCIAL AND INDUSTRIAL EDUCATION. West Midlands Group, *and* MIDLAND TRAINING WITHIN INDUSTRY ASSOCIATION
Tips on talking. 2nd ed. London, the Association, 1960. 12 pp. illus. 3*s* (2*s* 6*d* to members).

BRITISH STANDARDS INSTITUTION
Annual report, 1959–60. London, the Institution, 1960. 282 pp. 7*s* 6*d*.

*CANADA. National Research Council. *Library*
Union list of scientific serials in Canadian libraries. Supplement 1957–1959; edited by Marjory Meleghy. Ottawa, the Council, 1960. xiii, 290 pp. $9.

DAVINSON, D. E.
Periodicals: a manual of practice for librarians. London, Grafton, 1960. xiv, 165 pp. illus., diagrs., bibliog. 25*s*.

*DIRECTORY of university research bureaux and institutes: a guide to college and university sponsored bureaux, institutes, experiment stations, laboratories and other research organizations established on a permanent basis and carrying on a continuing research program: agriculture, business, conservation, education, engineering, government and public affairs, labor, law, life sciences, mathematics, science and technology, social sciences. Detroit, Gale Research Co. 1960. 199 pp. $20.

EDP idea finder: *Data Processing Digest,* 1957, 1958, 1959. Los Angeles, Canning, Sisson and Associates, 1960. [10], 656 pp. $69, £26.

FLOOD, W. E.
Scientific words, their structure and meaning: an explanatory glossary of about 1,150 word-elements (roots, prefixes, suffixes) which enter into the formation of scientific terms. London, Oldbourne, 1960. xix, 220 pp. 18*s*.

FRAUENDORFER, SIGMUND VON
Classification scheme of agricultural science. 3rd revised ed. London, Crosby Lockwood, 1960. xxiii, 159 pp. 60*s*.

GILROY, MARION
Library co-operation in Britain, 1950–1958: paper submitted to the Graduate Library School, University of Chicago, March 1959 . . . Ottawa, Canadian Library Association, 1960. 38 pp. bibliog. (Occasional papers series no. 24.) 70*c*.

*GLAISTER, GEOFFREY ASHALL
Glossary of the book: terms used in paper-making, printing, bookbinding and publishing, with notes on illuminated manuscripts, bibliophiles, private presses and printing societies. London, Allen and Unwin, 1960. [13], 484 pp. illus., diagrs., bibliog. 126*s*.

*GREAT BRITAIN. Her Majesty's Stationery Office
International organizations publications,

1959: supplement to Government Publications, 1959. London, H.M.S.O., 1960. [ii], 961–1002, xii pp. 6*d*.

INSTITUTE OF OFFICE MANAGEMENT
Clerical salaries analysis, 1960 . . . as at 1st March 1960. London, the Institute, 1960. 126 pp. tables. 50*s*.

*INTERNATIONAL COMMITTEE FOR SOCIAL SCIENCES DOCUMENTATION, *and* INTERNATIONAL ECONOMIC ASSOCIATION
International bibliography of economics. Vol. 7, edited by Jean Viet. Paris, Unesco, 1960. 528 pp. 53*s* 6*d*.

*LIBRARY ASSOCIATION
The subject index to periodicals, 1959; edited by Peter Ferriday, Joyce Asbury-Williams [and] G. H. N. Reay. London, the Association, 1960. 336 pp.

PACIFIC AERONAUTICAL LIBRARY
Uniterm index to periodicals, with citation 12,445–21,643, for the year 1957. Los Angeles, the Library, [1958?]. Various paging.

RANGANATHAN, S. R., *and* KUMAR, G., *editors*
Social science research and libraries: papers and summary proceedings of the Library Seminar on Research in the Social Sciences, New Delhi, 2–4 January 1959. London, Asia Publishing House, 1960. 196 pp. bibliog. 25*s*.

SIMONTON, WESLEY CLARK
Characteristics of the research literature of the fine arts during the period 1948–1957: thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Library Science in the Graduate College of the University of Illinois, 1960. Ann Arbor, University Microfilms, 1960. vi, 77 pp. bibliog. (Xerox copy.) 41*s* 9*d*.

UNITED STATES FIELD SEMINAR ON LIBRARY REFERENCES SERVICE FOR JAPANESE LIBRARIANS
American libraries: report. Tokyo, the Seminar, 1960. x, 147 pp.

*VICKERY, B. C.
Faceted classification: a guide to construction and use of special schemes; prepared . . . for the Classification Research Group. London, Aslib, 1960. iv, 5–70 pp. bibliog. 12*s* 6*d* (10*s* to members).

Articles and Papers

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Soviet library literature: a survey of selected manuals of methodology. *Library Quarterly*, vol. 30, no. 3, July 1960, pp. 173–87.

BHATTACHARYYA, K.
Aspects of documentation work in Indian research institutes. *Iaslic Bulletin*, vol. 5, no. 1, March 1960, pp. 51–9.

CASE, FRANK H.
The corporate secretary looks at records management. *American Archivist*, vol. 23, no. 4, October 1960, pp. 419–30.

CUMMINS, J. E.
The dissemination of scientific and technical information by the International Atomic Energy Agency. *Revue de la Documentation*, vol. 27, no. 3, August 1960, pp. 97–101.

DOUGNAC, M.-T., *and* GUILBAUD, M.
Le dépôt légal: son sens et son évolution. *Bulletin des Bibliothèques de France*, vol. 5, no. 8, August 1960, pp. 283–91.

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Select bibliography of archive administration. *Journal of the Society of Archivists*, vol. 11, no. 2, October 1960, pp. 67–73.

FOSKETT, D. J.
Documentation in occupational safety and health. *Revue de la Documentation*, vol. 27, no. 3, August 1960, pp. 102–7.

FOSKETT, D. J.
Notes on compiling bibliographies, for the guidance of students preparing reports and theses in the field of education. *Education Libraries Bulletin*, Supplement no. 2, Summer 1960, 18 pp.

FOSKETT, D. J.
Reference service and classification. *North-Western Polytechnic School of Librarianship, Occasional Papers*, no. 14, August 1960, 12 pp.

GUNTHER, ALFRED
Einige Dokumentationsprobleme wissenschaftlicher Tagungen und Kongresse. *Revue de la Documentation*, vol. 27, no. 3, August 1960, pp. 123–5.

GUNZENHAUSER, MAX
Die Allgemeine Systematik für Büchereien (ASB). *Dokumentation Fachbibliothek Werksbücherei*, vol. 8, no. 5, August 1960, pp. 151–4.

HESSE, GERHARD
Probleme des Auswahl–Sachkataloges (ASK) in wissenschaftlichen Bibliotheken. *Zentralblatt für Bibliothekswesen*, vol. 74, no. 3, July 1960, pp. 161–87.

HYSLOP, MARJORIE R.
Machine literature searching — some capabilities and limitations. *Sci-Tech News*, vol. 14, no. 3, Fall 1960, pp. 76–7.

LARSEN, KNUD
The Danish library system. *Library Association Record*, vol. 62, no. 9, September 1960, pp. 275–9.

LIPETZ, BEN-AMI
A successful application of punched cards in subject indexing. *American Documentation*, vol. 11, no. 3, July 1960, pp. 241–6.

MACHELSON, SONYA G.
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MACHINE reading: a survey of the printed codes that can be read directly by both men and machines, and of the reading machines developed. *Data Processing*, vol. 2, no. 4, October–December 1960, pp. 208–23.

MAIZELL, R. E.
Value of titles for indexing purposes. *Revue de la Documentation,* vol. 27, no. 3, August 1960, pp. 126–7.

MOOERS, CALVIN N.
The next twenty years in information retrieval: some goals and predictions. *American Documentation,* vol. 11, no. 3, July 1960, pp. 229–36.

OBOLER, ELI M.
U.S. library periodicals: a selected list. *Canadian Library,* vol. 17, no. 2, September 1960, pp. 77–80.

PIERROT, ROGER
Le catalogage des anonymes et des ouvrages classés au titre. *Bulletin des Bibliothèques de France,* vol. 5, no. 9–10, September–October 1960, pp. 367–73.

PLATT, JOHN R.
Pre-indexing of articles to speed up indexing, abstracting and search: [letter to the editor]. *American Documentation,* vol. 11, no. 3, July 1960, pp. 274–5.

POAGE, SCOTT TABOR
Work sampling in library administration. *Library Quarterly,* vol. 30, no. 3, July 1960, pp. 213–8.

POINDRON, PAUL
La microcopie: regards vers le passé et perspectives d'avenir à propos d'un centenaire. *Revue de la Documentation,* vol. 27, no. 3, August 1960, pp. 119–22.

RAO, S. RANGA RAJA, *and others*
Scientific and technological information services in India—a survey, by S. Ranga Raja Rao, K. N. N. Nayar and S. P. Phaduis. *Iaslic Bulletin,* vol. 5, no. 1, March 1960, pp. 40–50.

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Eine Untersuchung über die Anwendung von Aritma-Maschinen für Dokumentationszwecke. *Dokumentation,* vol. 7, no. 4, July 1960, pp. 113–6.

SHADD, DAVID
Some problems in providing reference service at a records centre. *Journal of the Society of Archivists,* vol. 11, no. 2, October 1960, pp. 61–7.

SOMERVILLE, SHEILA A.
Bibliography of electrical engineering—1. *Library World,* vol. 62, no. 723, September 1960, pp. 59–62.

THERMOPLASTIC recording: a new method of storing information... *Data Processing,* vol. 2, no. 4, October–December 1960, pp. 224–9.

TOMESKI, EDWARD
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TRIMBLE, R. F.
The periodical literature of inorganic chemistry. *Journal of Chemical Education,* vol. 37, no. 8, August 1960, pp. 419–21.

VLEESCHAUWER, H. J. DE
Le problème des sciences auxiliaires et son importance pour la bibliothèque. Parts 1 and 2. *Mousaion,* nos. 41 and 42, 1960, 115 pp.

MEMBERS' ADVERTISEMENTS

The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, BSC (ENG.), FIL, 12 Thorndene Avenue, London, N.11. Tel. Enterprise 1174.

TURKISH, FRENCH, and ITALIAN translations. All subjects. F. P. Scott, 4 Uphill Grove, Mill Hill, London, N.W.6. Mill Hill 3364.

Appointments vacant

ABSTRACT LIBRARIAN. An Abstract Librarian and Information Officer is required by ROLLS CONFECTIONERY LIMITED to be responsible for issuing up-to-date information in the form of a weekly list of abstracts to the scientific, technical, and marketing staff of the company. As much of the literature is published in German and French, a good working knowledge of these languages is essential, together with a sufficiently scientific background to permit the easy understanding of the journals read. The Librarian would also be responsible for the distribution of technical literature to the staff of the department concerned. A library qualification is not essential for this purpose though it would be desirable, but a suitable candidate would be given facilities to study for qualification. As the company is developing, promotion is almost certain as the company grows, and there is, therefore, a probability of such a librarian occupying an important position in the company if he or she has the right personality and is enterprising. Salary would be in accordance with qualifications, etc. Applications for this post should be addressed to Mr S. H. Cakebread, Chief Research Chemist, Rolls Confectionery Limited, Oldfield Lane, Greenford, Middlesex.

ASLIB proposes to appoint a full-time EDUCATION OFFICER to plan and organize intensive short courses for special librarians and information officers and to assist in development of educational policies in this field. Initial salary within the range £1,250–£1,750 p.a. plus superannuation. Intending applicants should first apply for further particulars to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

ASSISTANT LIBRARIAN is required by the UNITED KINGDOM ATOMIC ENERGY AUTHORITY at Risley to assist with the management of a large and important collection of scientific and technical reports. The library provides services to several establishments of the Authority and has connections with organizations in the United Kingdom and overseas. A pass degree or HNC in science is the normal qualification required, but candidates without this will be required to have wide library experience. A professional librarian qualification is desirable. Salary will be on a scale £660 (at age 22) to £815 (at age 26 or over) to £1,005. Contributory superannuation. Housing assistance and assisted travel schemes. Send postcard for application form quoting ref. 426/J122 to the Appointments Officer, UKAEA, Development and Engineering Group Headquarters, Risley, Warrington, Lancs. Closing date 28th November 1960.

DSIR HYDRAULICS RESEARCH STATION, Wallingford, Berks, requires TECHNICAL LIBRARIAN in the Experimental Officer grade. Qualifications: general science degree is expected. Experience in physical science and also in library or information work is desirable, languages an advantage. Salary (men) £1,015–£1,245. Favourable housing prospects for married officers. Age at least 26 years. Station is concerned with open-channel hydraulics, i.e. with hydraulics encountered by civil engineers. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting ref. no. E.411/OA. Closing date 3rd December 1960.

IBM BRITISH LABORATORIES, Winchester. A vacancy exists for an ASSISTANT LIBRARIAN in the technical information services of the Laboratories. The Laboratories are taking part in a co-ordinated world-wide programme of development of computing and data processing equipment. The technical information services of the Laboratory are responsible for collecting and disseminating information both inside and outside the IBM organization. A comprehensive library is being built up as part of this service. Duties of the Assistant Librarian will be to take day-to-day charge of the library, and will include ordering, accessioning, cataloguing, filing and circulation of literature, assisting with publications work, and control of internal and external loans. Applicants, between the ages of 20 and 25, should have passed the Library Association registration examination in at least groups A and B and should have had at least four years' experience in library work. Experience in an industrial library would be an advantage. The appointment is to the permanent staff of the Laboratories, with the company's usual employee benefits. Please write for application forms, quoting reference A9, to the Personnel Manager, IBM World Trade Laboratories (Great Britain) Limited, Hursley House, Hursley Park, Winchester, Hampshire.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, NOBEL DIVISION, has a vacancy in its Research and Development Department at Stevenston, Ayrshire, for a TRANSLATOR/ABSTRACTOR. The appointment will be concerned with work on foreign journals dealing with explosives technology, cellulose chemistry, organometallics, and general chemistry. Candidates should have a good scientific background and be able to read fluently technical literature published in French and German. They must be able to prepare abstracts for filing in a Central Index System. Previous library experience and knowledge of other languages would be an advantage. There are no rigid age limits for this appointment but the starting salary will be dependent on age and experience. Applications should be made to the Staff Manager, Imperial Chemical Industries Limited, Nobel Division, 460 Sauchiehall Street, Glasgow, C.2.

INFORMATION LIBRARY ASSISTANT (female 21–30) required by the Electricity Development Association. Applicants should have library experience, good typing ability, and working knowledge of indexing and filing. Salary £11–£12 according to age and experience. Excellent conditions of service include canteen facilities, pension scheme, hours 9.30 a.m. to 5.30 p.m. Applications to the Director, E.D.A., 2 Savoy Hill, London, W.C.2.

LIBRARIAN required to take charge of the ASLIB research library of special librarianship and information work. Applicants, men or women, should have a degree and special library experience. Knowledge of languages and a librarianship qualification would be additional recommendations. This is a challenging post with varied interest and opportunities. Salary on scale £900 × £50—£1,250, plus superannuation. Apply, naming two referees, to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

LIBRARY ASSISTANT (girl, under 30) required. Library experience advantageous; subjects at GCE 'A' level and some knowledge French and/or German preferable; good typing and duplicating essential. Salary range £500–£700. Superannuation after probationary period. Apply to Director, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.

Appointments wanted

INDUSTRIAL LIBRARIAN (ALA), specializing hitherto in metallurgy and materials' properties, seeks post in London, minimum salary £900 p.a. Box 1060, Aslib.

Wanted

Boxboard containers, January 1959 issue. Librarian, W. D. & H. O. Wills, Bristol 3.

Journal of the Association for Computing Machinery, vol. 1, nos 2, 3, 4, 1954; vol. 3, nos 1 and 4, 1956. The Andersonian Library, The Royal College of Science and Technology, George Street, Glasgow.

Nature, 21st January 1956, 177, no. 4499. Courtaulds Ltd, Technical Information Bureau, Coventry.

One copy of *Popular photography,* February 1960. One copy of *Non-destructive testing,* January–February 1958. The Librarian, Ilford Limited, 7–9 Roden Street, Ilford, Essex.

Journal of Documentation, vol. 11, no. 1, Box 1160, Aslib.

For disposal

Back issues of various medical, pharmaceutical, and veterinary journals. Please send requirements to Librarian, Distillers Company (Biochemicals) Limited, Broadway House, The Broadway, London, S.W.19.

ASLIB PROCEEDINGS

incorporating Aslib Information

CALCUTTA UNIVERSITY CENTRAL LIBRARY.

Volume 12 **December 1960** **Number 12**

ASLIB CALENDAR
1961

JANUARY

WEDNESDAY 4th. Film Production Librarians' Group meeting at Shell-Mex House.

FRIDAY 6th. Technical Translation Group meeting at Aslib.

WEDNESDAY 11th. Chemical Group meeting at Aslib.

WEDNESDAY 18th. Economics Group visit. See paragraph below.

THURSDAY 19th. Midlands Branch meeting in Birmingham.

THURSDAY 26th. Winter meeting. See paragraph below.

FEBRUARY

WEDNESDAY 1st. Film Production Librarians' Group meeting at Shell-Mex House.
Economics Group visit to Holborn Central Library.

FRIDAY 3rd. Scottish Branch Annual General Meeting at East Kilbride.

WEDNESDAY 8th. Economics Group visit to BBC Television Service Library.

WEDNESDAY 15th. Economics Group visit to Marks & Spencer Textile Laboratory.

MARCH

WEDNESDAY 1st. Film Production Librarians' Group meeting at Shell-Mex House.
Economics Group visit to Royal Institute of International Affairs.

WEDNESDAY 22nd. Economics Group Annual General Meeting.

WEDNESDAY 29th. Midlands Branch Annual General Meeting in Birmingham.

APRIL

WEDNESDAY 5th. Film Production Librarians' Group meeting at Shell-Mex House.

FRIDAY 21st – SUNDAY 23rd. Electronics Group annual conference at Ashridge College, Berkhamsted.

Aslib wishes all members and subscribers a happy Christmas and New Year

P. D. Record

Aslib has received, with deep regret, news of the death in October of Mr P. D. Record, formerly Assistant Secretary, Oxford University Appointments Committee. Mr Record served on Aslib Information Committee in 1950 and 1951, and on the Publications and Editorial Committee from 1952 to 1955. He edited volume 1 of the *Index to theses accepted for higher degrees in the universities of Great Britain and Ireland* and was co-editor with Mrs Magda Whitrow of volume 2, covering the academic year 1951–2. Mr Record will be greatly missed, particularly by his many friends in the library world.

Winter Meeting

A winter meeting will be held at 5.30 for 6 p.m. on Thursday 26th January at Aslib. A member of the staff of the Consumers' Association Ltd will speak on current trends in consumer protection, with particular reference to the work of the Association.

Aslib Cranfield Research Project

A report of the first stage of the project has recently been prepared by Mr C. W. Cleverdon and copies are available. This part of the investigation required the indexing of 18,000 documents by four different systems. The second stage, which is expected to be completed by September 1961, covers the testing and analysis of results. The investigation is being carried out with the aid of a grant from the U.S. National Science Foundation. *Aslib Cranfield Research Project: report on the first stage of an investigation into the comparative efficiency of indexing systems* is obtainable from Mr C. W. Cleverdon, The College of Aeronautics, Cranfield, Bletchley, Bucks, price 10*s*.

Scottish Branch

Some forty members of the Branch visited the National Library of Scotland, Edinburgh, on 26th October. The library receives approximately 100,000 items a year. The visitors were especially impressed with the well-equipped map room and the fine collection of manuscripts and charters.

The next Branch engagement is the Annual General Meeting and conference to be held at the National Engineering Laboratory, East Kilbride, on 3rd February 1961.

Economics Group

The winter programme includes the following visits: Board of Trade Library at 6 p.m. on Wednesday 18th January 1961; Holborn Central Library at 3 p.m. on 1st February; BBC Television Service Library at 6 p.m. on 8th February; Marks & Spencer Textile Laboratory at 3.30 p.m. on 15th February; and the Royal Institute of International Affairs at 6 p.m. on 1st March.

The Annual General Meeting will be held on Wednesday 22nd March. Full details will be published later.

EPA European Mission

The European Productivity Agency (EPA) has for some years been studying the needs of small firms for information and the ways in which they acquire and use it. As part of this programme a mission comprising about a dozen people from various European countries last month visited a number of small firms in the United Kingdom, Denmark, Germany, and France, to examine their procedures on the spot. The firms visited were on the one hand known to be 'information conscious' and to use information effectively, and on the other to be too small in most instances to have their own organized libraries or information services.

The UK member of the mission was Mr W. Ashworth of British Nylon Spinners. Mr Ashworth earlier prepared for EPA a booklet *How to set up your firm's technical information service,* available from OEEC, 3 rue André Pascal, Paris 16.

Northern Classification Study Group

Some two years ago a classification study group was formed in Manchester with similar objects to those of the Classification Research Group in London. A number of meetings have since been held at which papers were given on various aspects of library classification. The group is now planning a further series of lectures and hopes later to carry out one or two specific research projects by means of small working parties within the group.

Librarians and information officers working in the Manchester area are invited to join the group and those who are interested should write to the Honorary Secretary, Mr A. R. Cameron, A. V. Roe & Co. Ltd, Greengate, Middleton, Manchester.

French Technical Translation

A course in technical translation from French into English and from English into French is at present being held at the Institut Français in London. The course is intended to meet a need for better appreciation of French technical and scientific literature and to provide advanced training for translators in commerce and industry. Special emphasis is laid on correct idiomatic translation into French. The lecturer is Mr R. Turkel, BA(HONS), L ès L, FIL. Students may join the course in January at a fee of £5 10*s* and should apply as soon as possible to the Institut Français du Royaume-Uni, Queensbury Place, London, S.W.7.

Alternatives to the scientific periodical: a report and bibliography

Six copies of the report and twenty-five copies of the annotated bibliography with the above title by Ralph H. Phelps and John P. Herling are available to any member on request to Aslib. This report and the unannotated bibliography first appeared in the *Unesco bulletin for libraries,* vol. 14, no. 2, March–April 1960.

Periodical Publications in the Patent Office Library

The Patent Office has announced publication of a supplement to the second edition of *Periodical publications in the Patent Office Library: list of current titles.* The list includes sets of patent specifications and patent trade-mark journals as well as the world-wide collection of scientific and technical periodicals in the library. The 94-page supplement includes over 2,000 new titles and alterations. It is available price 5*s* from any branch of Her Majesty's Stationery Office, from the Sale Branch counter of the Patent Office, or through any bookseller.

Lectures on Bibliographies, Literature Surveys, and Abstracting

As a part of Course L.41, on the dissemination of information, at the North-Western Polytechnic, London, N.W.5, the following lectures will be given by Mr J. L. Farradane, BSC, FRIC, on Thursday evenings from 6.15 to 7.45 p.m.

Compilation of bibliographies, 5th January 1961.
Compilation of literature surveys, 12th January.
Abstracting, 19th and 26th January, 2nd and 9th February.

Students may attend individual lectures at a fee of 2*s* 6*d* each.

Philippine Abstracts

Volume 1, number 1, dated April 1960, of a new journal entitled *Philippine abstracts: a quarterly classified summary of the latest Philippine publications in the field of applied science* (*UDC* 6) has been received. This first issue contains some sixty abstracts of papers published during the first three months of the year and classified by UDC under the general headings: medicine, engineering, agriculture, animal husbandry and products, fisheries, chemical technology, and various industries. *Philippine abstracts* is published by the Division of Documentation, National Institute of Science and Technology, 272 Herran Street, Manila, Philippines, at an annual subscription of *P*3, or $2 (14*s* 6*d* approx.) for foreign countries; single copies *P*.80 or $.50 (3*s* 7*d* approx.).

Mathematical Reviews

The American Mathematical Society has announced that volume 22 (1961) of *Mathematical reviews*, the Society's monthly abstracting journal, will include not only pure mathematics but '*all* of applied mathematics, such as computing machines, mechanics, elasticity, electromagnetic theory, quantum mechanics, astronomy, operations research, information and communication theory, and applications to the behavioral sciences.' It will contain more than 11,000 reviews, an increase of some 3,000 over the previous volume. The annual subscription to *Mathematical reviews* remains unchanged at $50 (£18 approx.) or $16 (£5 15*s* approx.) to members of the American Mathematical Society, 190 Hope Street, Providence 6, Rhode Island, USA.

Union List of Serials

The Library of Congress has announced that the 1960 ten-year cumulation of *New serial titles* will be published in 1961. It will supersede all earlier annual volumes of *New serial titles* and provide coverage of the serials that began publication between 1950 and the end of the current year. It will also form a supplement in advance to the forthcoming third edition of the *Union list of serials*. The 1960 ten-year cumulation is available on subscription to the 1960 issues of *New serial titles*. Librarians who wish to order copies are advised to apply early to the Card Division, Library of Congress, Washington 25, DC, USA.

Guide to Microforms in Print

The Microcard Foundation has announced the forthcoming publication—early in 1961—of the first issue of a *Guide to microforms in print,* an annual publication which 'will list or refer to all [American] publications available in microform (microfilm, Microcard, Microtext, Microlex, Readex Microprint, etc.) from commercial publishers. It will also note publications of non-commercial organizations issuing lists or catalogs on a regular basis.' Inquiries should be addressed to Microcard Foundation, 901 Twenty-sixth Street N.W., Washington 7, DC, USA.

American Documentation Institute

The American Documentation Institute has announced the appointments of Dr John B. Kaiser as Executive Director of the Institute and Dr Luther H. Evans as Editor of *American Documentation.* Dr Evans was Librarian of Congress from 1945 to 1953 and Director-General of Unesco from 1954 to 1959. He is also Project Director of the survey of libraries in Federal departments and agencies, now being carried out at Brookings Institution.

FID Telephone Number

We regret that, owing to a printing error, the telephone number of FID was wrongly quoted on page 339 of our October issue. The number should read The Hague 18 00 81.

NEW MEMBERS

Corporate

Name	*Location*	*Representative*
Aluminium Co. of America	USA	J. L. Brandt
Banff County Library	Keith	R. McLaren
Bankers Trust Company	London	W. H. Morris
Bell Telephone Laboratories Inc.	USA	W. K. Lowry
Bellrock Gypsum Industries Ltd	London	H. Williams
An Chomhairle Leabharlanna	Dublin	D. Foley
Cigarette Components Ltd	Wembley	B. Smith
Cow & Gate Ltd	Guildford	L. H. Hillman
Decca Record Co. Ltd	London	D. G. Jaquess
Dew, G., & Co. Ltd	Oldham	D. D. Wilde
Electric Resistance Furnace Co. Ltd	Weybridge	E. F. Watson
Jobling, James A., & Co. Ltd	Sunderland	F. A. Graham
Marshall & Anderson Ltd	Motherwell	Dr W. MacFarlane
North West Wiltshire College of Further Education	Chippenham	Miss N. M. Hobbs
Ryaland (M/C) Ltd	Manchester	P. E. Kientsch
Petrofina (Great Britain) Ltd	London	K. B. Parfitt
Smith, S., & Sons (England) Ltd	London	O. S. Janson
West African Building Research Institute	Ghana	I. Small
West African Cocoa Research Institute	Nigeria	T. W. Tinsley
West Wiltshire & Trowbridge College of Further Education	Trowbridge	Miss N. M. Hobbs

NEW MEMBERS *contd.*

Individual

Name	*Location*
Dorling, M. J.	London
Dover, A.	Harrow
Lane, Mrs D. M.	Bournemouth
Potts, R. S.	New Jersey
Poyser, C. W. A.	London
Price, Miss M. E. M.	Sanderstead
Rao, K. R.	Bombay
Sebesteny, A.	Bristol
Tickle, J. W. H.	St Athan
Wilson, Miss M.	London

THE ASLIB CRANFIELD RESEARCH PROJECT ON THE COMPARATIVE EFFICIENCY OF INDEXING SYSTEMS

C. W. CLEVERDON

Librarian, College of Aeronautics, Director of the Research Project staff

35th Annual Conference, Brighton, September 1960

INTRODUCTION

THE Aslib Cranfield Project had its beginning some years back, when several members of the Aslib Aeronautical Group took an active part in the development of a new form of index that had been proposed by the National Aeronautical Institute of Holland. Later we did some tests on the uniterm system of co-ordinate indexing and, following a joint conference with the Classification Research Group, the idea developed of making a complete test of various indexing systems. A draft programme was prepared and was considered by many people in this country and the United States. An application was made to the National Science Foundation for a grant to cover the first stage of the investigation, and in July 1957 the Foundation advised Aslib that the grant had been approved.

This covered the preparation of four indexes and work commenced in April 1958. (For a detailed account of this stage of the investigation see Ref. 1.) Three persons were appointed to the staff of Aslib for the duration of the grant, and they were selected for their different professional experiences. Of the two librarians, Mr J. Sharp had considerable experience of indexing aeronautical information, while Mr J. Hadlow came straight from working in a county library. The third person, Mr T. Opatowski, was a qualified aeronautical engineer with no experience of indexing. Some six months later Mr Opatowski resigned and Miss B. Warburton, a librarian who had been working in another subject field, was appointed.

The four systems which were to be tested were the Universal Decimal Classification, an alphabetical subject list, a special facet classification, and the uniterm system. We planned to index 18,000 documents dealing with aeronautics and allied subjects, but half the documents were in the specialized field of high-speed aerodynamics, so that we might investigate any differences in efficiency between the special and general subjects.

Further subdivisions were that half the documents were research reports while the remainder were journal articles, and half the documents were of American origin.

The 18,000 documents were divided into three sub-programmes of 6,000 documents, within each of which there were sixty groups of one hundred documents. Each group had unique characteristics, in that it was indexed by a different indexer, with a different system as the main system or at a different time allowance. There were five fixed time allowances for indexing each document, these being sixteen minutes, twelve minutes, eight minutes, four minutes, and two minutes.

The decisions of the indexers were entered on master indexing cards which were used for the compilation of the four indexes. Conventional 5 in. × 3 in. cards were used for the UDC and the alphabetical subject catalogue and also for the facet classified catalogue and chain index. With uniterm we posted numbers on aspect cards. It should be emphasized that we were not attempting to make any assessment of the physical forms of the catalogues. The basic purpose of the investigation was to make a comparison of the four systems in the light of the different conditions under which the indexers were working.

THE INDEXING PROGRAMME

For the purposes of the project an enumerative system was required, since enumerative classifications are widely popular in this country and on the Continent. UDC was chosen as being the most favoured system of this type, particularly in Europe. In America and Canada, however, the dictionary and alphabetical subject catalogues are widely used, and it was decided to test a subject catalogue in the project.

Enumerative classification schemes and alphabetical subject catalogues are systems which have long been in use in libraries, and as a contrast we selected two modern systems. The first of these was the uniterm system of co-ordinate indexing as proposed originally by Dr M. Taube, and for the other Mr B. C. Vickery and Mr J. L. Farradane prepared a faceted classification scheme for aeronautical engineering.

Indexing began in April 1958 and within two weeks it was obvious that we were running into serious problems. Some of these are considered later with the comments on the systems, but one practical difficulty was that the programme was originally planned on the basis of a thirty-eight-hour working week. To be in the office for this time was not, however, the same thing as doing thirty-eight hours' productive work. The indexers used a stop-watch to time themselves when indexing and we found that, for a week's work, twenty-five hours of time recorded on a stop-watch was as much as could be normally achieved. This compared very well with a test which had been done in an engineering design office, where it was found that only 40 per cent of a 7½-hour day was spent in actual productive work.

INDEXING

Universal Decimal Classification

The indexing by UDC was based upon the conventional schedules published by the British Standards Institution. In addition, we had expanded schedules of various sections of UDC which had not been approved by the International Federation for Documentation. The most important of these were the expansions of 532.5 and 533.6, dealing with hydrodynamics and aerodynamics, prepared by the Aslib Aeronautical Group, and the expansions to 620 and 629.

The schedules of UDC abound with many auxiliary devices, which are provided for synthesis, so that a complex subject might be specified by a single notation. The use of these devices can be easily forgotten, producing chaos in the catalogue. In order to help us to do our indexing as well as possible and to indicate the use of notations in the scheme by the indexers, it was decided at the outset that we should have the best possible alphabetical index to the UDC. This index was the responsibility of Mr Sharp.

When new notations were used by the indexers, alphabetical entries were written and passed to Mr Sharp. He approved or rejected them and then produced standard entries for the common index to the UDC, a copy of which was held by each indexer. Where necessary Mr Sharp added extra entries, based upon those requested by the other indexers, if he thought that the extra entries would represent terms sought by a user of the index.

Alphabetical subject catalogue

Before the project started we examined a number of different lists of alphabetical headings and finally decided to use as a basis the Special Libraries Association *List of subject headings for use in aeronautical engineering libraries.* We soon met difficulties in using this list because of:

1. its lack of suitable headings;
2. the broadness of its headings;
3. the lack of any indication as to how headings should be compiled.

The last point is perhaps the most serious, for it indicates a point on which we were never able to find any satisfactory information. What we wanted for our work was a 'grammar' to indicate just how every heading should be made, so that we could have consistency in the catalogue. Neither in the literature nor in correspondence and conversations with librarians using subject catalogues were we able to find this grammar.

A recent book on the subject by E. J. Coates, *Subject catalogues: headings and structure* (Library Association), does help to clear up this gap in the field of subject catalogues.

In order to have something to guide us in our work on the subject catalogues and to help to give some consistency we drew up a set of rules for the compilation of subject headings and subheadings. The rules may look amateurish and naïve, but we felt that it was better to have some rules to help us in our work rather than to have the difficulty of being presented with a fresh decision every time the need arose for the generation of a new heading.

New headings were all passed to Mr Hadlow, who checked them for synonyms in the index of headings already used, and made out a standard form of entry which was duplicated and added to the copy of the common index held by each indexer. 'See' references were made where necessary, but we did not use 'see also' references. Our reason for the lack of 'see also' references is that, after discussion and correspondence with those having experience of subject catalogues, we came to the conclusion that the only satisfactory method of compiling them was by making a classification scheme of the headings which are in use and then by assigning 'see also' references down the classes of the scheme and across it to co-ordinate headings.

We intend to compile 'see also' references for the subject catalogue in this way so that retrieval results for a catalogue with and without them may be compared.

Faceted classification scheme

The faceted scheme is one which has categories of subjects derived from the application of a single characteristic. The resulting categories are arranged in a preferred order. A non-hierarchical alphabetical notation is used. Classification is done by selecting a number of terms from the categories to represent the subject and by placing these terms in an order governed by the order of the categories from which they are taken, i.e. the preferred order.

The chain index provides the key to the location of the distributed relatives within the classified section of the catalogue. It is built up by citing the terms represented by the class symbols in the reverse order, in words, so as to provide the basic index entry to the full classification symbol for a document. Thereafter, additional entries are made by deleting one term at a time from the beginning of the index entry and suitably deleting the corresponding notational element at the end of the class symbol.

Troubles found with this system included inconsistencies which arose through too much freedom being given for personal decision by the indexers in relation to changing the fixed order of the elements in certain situations. After discussion with the authors the instructions on this and similar points were made more precise. In addition we found the schedules did not originally contain everything of a technical nature which we required. In order to clear up this point Mr Opatowski undertook a complete revision of the schedules, after which we 'froze' the schedules and no additions were made.

It was probably only to be expected that, as being a comparatively new system, we should have most difficulties with facet, but it is only fair to say that, once the original problems were overcome, indexing by facet became the most straightforward of all systems.

Uniterm

The only comment to make on the uniterm system is that from the individual indexers' viewpoint it presented no difficulties. Miss Warburton was responsible for scrutinizing any new uniterms to ensure that synonyms were not used, and for maintaining the authority file. Compound terms such as 'turborockets' presented occasional problems, and it was a joint decision as to whether these terms were in such general and accepted use that they should be left as they were or whether they should be broken up into their component words.

TESTING

The basic method chosen to test the relative efficiency of the four indexes was to put to each index a number of questions based on documents in the collection. While we realize there are weaknesses in this method, it was the only practical way of doing our main test programme, because it is the one method which gives us the required data on the controlled variables of the indexing.

The collection of 18,000 documents was divided into three sub-programmes of 6,000, which were subdivided into sixty groups of one hundred documents. Each group was indexed under different conditions, either of main system, of timing, or of indexer. These conditions were repeated within each sub-programme of 6,000 documents. Because of their increased knowledge of the systems it is presumed that the indexers would produce a higher standard of indexing for the final sub-programme of 6,000 documents. Since it is the comparative efficiency of the systems that is our main objective, 75 per cent of the test programme was concentrated on this final 6,000 documents. However, to obtain all information relevant to time and indexer, we required our test programme to cover, in a fixed manner, each group of one hundred documents. Hence the necessity for controlling the questions. The predetermination of a relevant document was the only feasible way to by-pass the difficulties experienced in a previous investigation of this kind.

When the programme was first compiled provision was made for testing a 20 per cent sample of the final sub-programme. This would require 1,200 questions, plus a further 400 for testing the earlier groups. As the four indexes would be tested by each question, a total search programme of 6,400 searches was planned. The questions to be used were compiled by representatives of about fifty organizations in the United Kingdom, the United States, Canada, and Holland.

To ensure an even distribution of questions over the groups of documents each person assisting in the compilation of the questions was sent a selective list of documents. From this list he chose suitable documents upon which he could base his questions. He was asked to formulate his questions from the subject matter, and to vary them from specific to general. The people concerned in preparing these questions were mainly engineers and scientists, but in all cases the questions were passed to an independent panel of librarians and technical people in the aeronautical field, who 'vetted' each question before it was included in the testing programme. In order to record the search programme and results for each question, master cards were prepared on which the questions were entered together with the identification number of the document upon which the question had been based. The procedure then was for the searcher to formulate his first search programme, write this down on the card, and then check the catalogue at the place decided on. For instance, the question 'Suitability of ultra-violet and white lighting for aircraft instruments' might have (with alphabetical) a first search programme of 'INSTRUMENT PANELS—Illumination'.

If a catalogue card bearing the document number given on the question card is at the searched location, this search is considered successful. The result is recorded together with the number of other documents found at the same place in the catalogue. If the first search does not produce the required document number the searcher will then formulate a second search programme (possibly 'LIGHTING, COCKPIT'). The catalogue is checked again at this place. Either the required card is there or is not. If it is still a failure a new search programme will be decided on, and this will be repeated until either the required card is found or until the searcher has no further reasonable programmes.

It is purely the intellectual problem of indexing and formulating search programmes that is the subject of this investigation; the physical methods we have used for recording our indexing decisions are quite incidental to the work. We have, in fact, a conventional 5 in. × 3 in. card catalogue for the UDC, alphabetical, and facet catalogues, and document numbers entered on 8 in. × 5 in. cards for the uniterm catalogue, only because these were the most convenient physical forms for our purposes. In different circumstances other forms of catalogue, or the use of machines, might be considered more efficient, as, with a different form of catalogue, searching time might be reduced although the actual search programme remains the same.

Whatever physical form of catalogue is used, however, if the search programme remains constant, the result is bound to be the same, and therefore it is obvious that time factors do not enter into the searching in the same way as they did with the indexing.

In our first round of testing we used four hundred questions, making a total of 1,600 searches, these being done by three of the project staff. As was to be expected, we came up against some problems, the main ones being that of deciding *a.* exactly what constituted a separate search programme, *b.* how many searches could reasonably be made, and *c.* how general a search was justified.

In the light of our experience, in the second round of testing, we are working to a set of instructions which can be summarized as follows:

1. A single search consists of an exhaustive permutation (as far as the system permits) of any given combination of elements.
2. The addition or deletion of any one or more parts of the original set of elements shall constitute a new search.
3. The complete search programme may be continued to a stage where there is one less than the original number of elements decided upon.

To test the effect of people with varying qualifications doing the searching we have had the assistance of five technical people, each with a different subject specialization, who between them are putting 2,500 questions to the indexes. These questions duplicate those used by the Aslib team.

It now appears that the original testing programme involving a 20 per cent sample test may not have to be continued to its limit. Each sub-programme of a 5 per cent sample test is completed separately and the testing programme will end when the results are considered sufficiently valid.

As mentioned earlier, we recognize certain weaknesses in this test programme, and therefore other forms of testing have been devised which will, in effect, test our basic test programme. Since the questions we are using have been based on documents for which we are searching, there is the possibility that the language of the document will have influenced in the same way both the indexer and the compiler of the question. The result of this is that efficiency of the systems might be unduly high. To overcome this problem a sample of the questions used in our testing programme will be sent to various aeronautical organizations who from their own resources will compile lists of documents which they consider might be relevant to the question. These lists will be checked against the documents indexed in our programme and those documents which are included in our collection will be sent with the appropriate question to a qualified person connected with the particular subject field. He will be asked to go through the documents and assess the relevance of each document in relation to the question. The question will then be put to the indexes in the usual way but there will be an important difference. The searcher will not know how many documents he should retrieve, for depending on the question these may be a hundred or even none at all. Also, since the terminology of the required documents is less likely to match that of the question, we may expect to have greater difficulty in searching.

Another possible weakness is the fact that we are using 'manufactured' questions. We do not consider this to be so serious but we do intend that the indexes will also be tested with 'real' questions. Several libraries will be asked to take details of queries they receive during the next few months, together with a list of the documents which were found to be relevant to the question. The documents will be checked against our collection, and the questions put to the indexes. The resulting documents found will again be compared with the list for their degree of relevance.

Also, a number of postgraduate students and members of the College staff have agreed to use the indexes for the next few months whenever they require technical information and to record the results of their searches. At the end of the programme they will be asked to give their views on the efficiency of the indexes and their personal reaction to the different types of index.

REFERENCE

1. C. W. CLEVERDON. *Report on the first stage of an investigation into the comparative efficiency of indexing systems.* Cranfield, the College of Aeronautics, 1960.

PRELIMINARY TEST RESULTS

In considering the figures given in Test Results 1–5 it is important to bear in mind the tentative nature of these results. Our second round of testing is being conducted on more rigorous lines, and as a result the efficiency may fall. In addition, the figures as given are subject to a standard error (s.e.) which can be calculated from the equation $\sigma_p = \sqrt{\frac{pq}{N}}$.

As the size of our sample (i.e. the number of searches) increases, so the standard error will be reduced, but it is still at present a significant figure, and is therefore shown for each test result.

We have not done sufficient detailed analysis to permit of many comments on these figures, but the following points appear to be of possible significance.

Test Result 1. The level performance of the systems with the possible exception of facet.

Test Result 2. The ability of persons with little or no previous experience of this type of work to make such effective use of the UDC catalogue.

Test Result 3. The high standard error makes the detailed figures of little significance, but the final line shows that an increase of eight times the indexing time resulted in a gain in efficiency of possibly only 8 per cent.

Test Result 4. A significant result is the ability shown by Mr Hadlow (indexer A) to achieve such a high efficiency without having had any previous experience of this type of work.

Test Result 5. Contrary to expectations, we achieved comparable figures for the aerodynamic questions as against those in other subjects.

As stated, our second round of testing is now in progress, and it may be that the new search instructions will modify the above results. Any such modification, however, is likely to be in a general decrease in efficiency of all systems. There is room for difference of opinion as to what is a reasonable standard of efficiency but, all things considered, we were somewhat surprised to find that in our case it was so high. Some of our complete failures were due to a lack of understanding on our part of the real meaning of the question, while in many other cases we failed to find the source document, but retrieved other references which, in a real-life situation, might have provided equally satisfactory answers. We do not yet, however, know how much of the potentially relevant information we are retrieving. Without being able to offer any proof, we believe that, where we retrieve 80 per cent of the source documents, we are also retrieving 80 per cent of the documents in the collection which have a degree of relevance at least equal to that on which the question was based.

This matter of relevance is becoming a popular problem in matters of information retrieval; it may be that its importance is being over-emphasized and that attempts to measure it are being over-refined, but a more detailed examination of these points will be given in a later paper. However, if the statement made above is proven, as we expect to be able to do in later tests, then we can also quite simply test the efficiency of retrieval of documents of a low degree of relevance by using search questions which have been based on documents of a low degree of relevance.

While reiterating what has been said previously concerning the main test programme as being, in our view, the only practical method for the basic work, we still acknowledge that it has certain weaknesses and accept the necessity for further test programmes. The encouraging aspect for us is that there is no difficulty in devising new programmes to overcome any weakness in our main tests, and we can continue our tests until every scrap of useful information has been obtained. At the completion of all the test programmes there will be much analysis to be done, and it appears that the most interesting part of this will be in connection with the failures. We hope that from this work it will be possible to obtain information which will enable us to state in detail reasons for the success or failure in finding relevant information. Within this general framework lie the decisions by the indexer of the significant matters in the text; the assistance which is given by the different systems to enable him to decide on satisfactory codings for the selected information; the ease or difficulty of translating the language of a question inquiry into the language of the index; the comparative assistance which the various systems give the searcher in finding specific or further relevant information. We should be able to isolate many of the variables which are inherent in the problem and find the effect of altering our original actions. Eventually it should be possible to arrive at a position where it will be possible to state exactly which requirements an information retrieval system must meet and to propose methods for the design of such a system. These are ultimate aims, but there may be a more immediately practical result from the project.

In a recent paper dealing with the great advances made in aeronautics during the past fifty years, Mr M. J. Lighthill, FRS, the Director of the Royal Aircraft Establishment, wrote: 'Countless ingenious experiments on models lay at the back of every advance, and brilliant theories have been devised to make sense of the experiments'. This quotation has for us a threefold significance. 'Countless' experiments implies that we should not be too disappointed if this single experiment fails to provide all the hoped-for answers. Secondly, the quotation stresses the fact that theories should follow the experiments, and thirdly it emphasizes the importance of experiments on models.

If there is one thing that seems certain in information retrieval, it is that theory has outrun experiment. This is not to decry all the brilliant theories that have been put forward, but the lack of experimental data tends to make them suspect. The most important requirement in information retrieval is a recognized standard of measurement and after that we need a satisfactory method of measuring. Only when these have been found will it be possible to know for certain whether any new system of indexing or retrieving information is an improvement on previous methods. At present all those trying to solve the problems of information retrieval are working very much in the dark, uncertain as to the real problems and quite unable to apply any measurements to their proposed solutions. Yet it is difficult to think of any industry where an organization would attempt to design and build a new piece of equipment without first knowing the exact performance and efficiency of that existing equipment which it was intended to supplant.

We hope that eventually we shall have sufficient data to form a standard of measurement for information retrieval systems. In addition we expect to be able to devise a method by which it will be comparatively easy to measure the efficiency of any single catalogue or index in any subject field, and by an extension of the method it will be possible to measure the effects of making changes in the normal methods used in the compilation of such a catalogue. The stage has not yet been reached where this can be done; the method is fairly clear, but we have not yet obtained all the required data from our own experiment.

If it is possible to produce a workable method, it would possibly be the most useful result that could come from our work, and the attempt to bring this about will be a major objective during the next year. However, at the same time, the project is throwing up many other investigations which need to be made, and for those who are willing to work on the experimental side of information retrieval the field is still open.

TEST RESULT 1

Retrieval efficiency based on 300 searches by project staff.

System	*Efficiency percentage*
UDC	78.6
Alphabetical	81.5
Facet	71.4
Uniterm	78.5

(s.e. = 4.6–5%)

TEST RESULT 2

Retrieval efficiency based on searches by engineering staff.

System	*Efficiency percentage*
UDC	81.1
Alphabetical	74.7
Facet	61.9
Uniterm	76.1

(s.e. = 3.7–4.7%)

TEST RESULT 3

Retrieval efficiency according to indexing time.

System	Time in minutes 16	12	8	4	2
UDC	76.3	90	75	78	75
Alphabetical	89.8	85	78.4	77.2	74.6
Facet	67.8	76.6	65	66.6	72.9
Uniterm	84.7	81.8	75.0	89.0	62.6
(s.e. = ±11–14%)					
Average for all systems (s.e. = 5.6–7%)	79.6	83.1	73.3	77.5	71.3

TEST RESULT 4

Retrieval efficiency according to indexer.

System	Indexer A	B	C
UDC	76.3	80.5	79
Alphabetical	85.6	74.2	84
Facet	72.5	74.6	65.4
Uniterm	78.4	76.6	78
(s.e. = 8–9%)			

TEST RESULT 5

Retrieval efficiency according to subject.

System	*Aerodynamic papers*	*Other subjects*
UDC	78.4	77
Alphabetical	79.3	83.7
Facet	69	75
Uniterm	79.6	76.5
(s.e.=6.6–8%)		

DISCUSSION

Opening the discussion, the Chairman, MR J. L. FARRADANE (Tate & Lyle research Laboratory), pointed out that the project represented fundamental research, leading to the development of basic theory, and was concerned with principles rather than with systems.

MR R. L. COLLISON (BBC) said that the Society of Indexers, of which he was a member, was particularly concerned with closing the gap between the theory of indexers and the practice of users. There were often included in catalogues and indexes headings which no normal user would seek, whereas those were absent which he would expect to find.

Mr Cleverdon replied that a count would be made of the number of times different terms or notations had been used and the number of times they were searched. This might give useful information on what were unsought terms.

MR ANTHONY THOMPSON asked if a reason could be given for the higher efficiency of UDC than of faceted classification in the tests. Were the faceted schedules as closely subdivided as the UDC?

Mr Sharp (Aslib Cranfield Research Project) replied that there were, on the contrary, probably too many terms in the faceted schedules, which made selection more difficult.

MISS BARBARA KYLE (National Book League) suggested that the faceted system of classification was comparatively undeveloped. It was possible that many of the unsought terms were common subdivisions. An additional scheme should be tried in order to complete the investigation.

Mr Cleverdon replied that it was intended to re-test the faceted indexing by post-co-ordinate methods. A preliminary analysis of failures suggested that those of the UDC and uniterm systems occurred largely through faults in indexing, whereas failures of the faceted system were attributable to faults in searching.

MR FELIX LIEBESNEY (The British Aluminium Co. Ltd) asked if the test results would give information on time required for retrieval.

Mr Cleverdon replied that there were three separate aspects of retrieval: *i*, the search programme; *ii*, the actual search, with time depending on method and equipment; and *iii*, the amount of relevant or non-relevant material achieved. The present investigation covered *i* and *iii* and more work would be needed in order to obtain reliable data on time factors.

MR K. R. LENEL (Internal Combustion (Holdings) Ltd) suggested that there was a need for psychological investigation into how authors chose their titles and headings, how indexers indexed, and how searchers sought.

Mr Cleverdon said that he found this an interesting and complex problem. He had, for a time, kept a private diary of the moods of the indexers working on the project but had not really found out anything through doing so. Some useful information might be obtained by having the same ten documents indexed by a hundred different workers and then giving the indexes to a hundred others to use.

MR J. MILLS (North-Western Polytechnic) asked if the project indexers had taken into account the fact that use of UDC lent itself to extensive duplication of entries by inversion, using the colon, whereas the faceted scheme threw the maximum burden on the alphabetical index, which should therefore be made particularly thoroughly to include all sought terms. Mr Cleverdon's first report indicated that significant steps had been omitted, where the notation failed to display a relation, because clerical workers had not been able to recognize such a relation without consulting the schedules. Could not a selective list of the major connectives have been made?

Mr Sharp replied that whereas the UDC schedules were often misused through lack of an adequate alphabetical index, in the project particular care had been taken to produce a good index. For the purpose of the test, however, the facet had been accepted as a one-place scheme, with a chain index to look after the difficulties. The nature of the programme had precluded the working up of containing heads, as this would have had to be done for each term in the notation. It was felt that more use should be made of multiple entries.

MR V. BISKE (Lobitos Oilfields Ltd) asked: *i*, if any of the questions sent in for the programme had been rejected; *ii*, if the very slight variation in accuracy of indexing within the varying time limits was attributable to all the documents having been unusually short; and *iii*, whether authors could not be asked to indicate index headings.

Mr Cleverdon, replying, said that all the questions had been submitted to a panel of three persons but only one in four hundred had been discarded as unsuitable to the purpose of the project. The lengths of the documents had varied between half a page and two hundred pages, averaging thirty pages for reports and seven pages for articles. The indexers had tried to get the maximum depth of indexing in the time allowed. When limited to two minutes they did not have time to do much more than read the titles. He considered that it seemed only logical that authors should give general index headings and abstracts of their work.

SCIENTIFIC INFORMATION AND ITS USERS

PROFESSOR J. D. BERNAL, MA, FRS
Department of Physics, Birkbeck College, University of London

35th Annual Conference, Brighton, September 1960

I AM very conscious of speaking to you as an outsider. All of you here are professional people involved in the handling of information. You cover the whole process—the collecting, the storing, the finding, and the handing out of information. I come in at both ends of the process, as a provider of information and as a user of information. Now when I say a user of information, I am very tempted, as all working scientists are tempted, to think that because I am a user I can tell the information people exactly what they ought to do. If I resist the temptation it is because I know that I am only *a* user. I am not a typical user, I am not an average user: I cannot say that my studies in the use of scientific information, which began long before the Royal Society Conference of 1947, entitle me to speak with any authority. Nevertheless, what I do say is this: instead of or as well as myself you should consider a whole series of differently graded users and between them they would represent the people to whom you are giving your services.

Of course, the older type of librarian considered it his first duty to preserve the written work in his charge in some form or other—to lock it up, chain it down or otherwise prevent anyone stealing or destroying it. Some even felt that this was the beginning and end of their duty. I can remember Dr Spencer, the late Curator of the Natural History Museum Mineralogy Collection, when as a young scientist I went to see if I could get a very, very small crystal to examine, saying to me, 'No, I am in charge of this museum, my duty is to preserve the specimens in it. You cannot have it.' I asked: 'What are you preserving them for?' He answered: 'Some time they may be of use to science.'

Luckily, the modern librarian has moved well beyond this static attitude. What is going on now—you will realize this far better than I do—is an emphasis no longer on the mere storing of information. As in economics the value of a currency depends on the quantity of money held multiplied by the speed at which it circulates, so in science the question of circulation, of the rapid communication of knowledge, is one in which the libraries, and particularly the specialized libraries, have an absolutely vital part to play.

What more precisely should be the part of the libraries in the general process of scientific communication? This is not a simple question, for the field of information is not unitary. Here again you find divisions, and divisions of a very complex nature. One system of such divisions is admirably dealt with in your organization itself. The specialized libraries—which you represent—are divided according to subject, and therefore you are in a particularly fortunate position of having, each one of you, a set of users who are, as it were, marked out because of their special interest. If you take the group of interlocked information services such as the Commonwealth Agricultural Bureaux, although all their users are in some sense agricultural, each branch has its own special requirements. These requirements, however, will be vastly different over the whole field of science and technology.

Looked at from the aspect of the specialized user, I think perhaps I am the least suited to deal with the subject, because the branch which I represent, physics, has in some ways the least use for any form of stored knowledge, even less than mathematics where, in principle, anything can be found out by pure reason alone and once proved always remains true. In contrast, as Dr Urquhart's investigations have shown, the mean life of a piece of physical truth is about two years, and therefore, to be of any use, you have to pass the stuff on and pass it quickly. If you go over further into the spectrum towards the biological sciences you find that, although discovery is equally rapid, past observations are still useful. Here we get statistical mean lives, which probably do not mean anything precise, of the order of fifteen years. The reasons for this are fairly clear; for instance, if you are an entomologist, you must be able to refer back to an insect which may not have been seen or notified by anybody else for twenty or thirty years. That is a very different kind of problem from that of rapidly circulating information on physics; it is one which justifies the holding of fairly large stocks of back numbers in libraries. But I wonder whether in fact our stocks are not too large. To me Dr Urquhart's study of the Science Library was a revelation which shows that an enormous amount of stored material is in fact hardly ever used.

The division of users by field and subject does give rise to special problems for information services, but this is not the only kind of division. Another kind, which one way or another you probably all make in the course of your work, is that into what might be called the functional type of user. Now the same actual user may appear in different functional roles at different times. I will explain what I mean. The key question here is, what does the user want the information for? Now, by and large, it depends whether the information is wanted for the object of *advancing knowledge,* or of *completing* information, or of *using* information. If we could only break down the classification of users we should find that their requirements for libraries or information services are quite different. Unfortunately, it happens that most of the stocks of books and periodicals in the libraries are held for the kind of user who is quite the rarest user of all. The least extensive user is the person who wants the information in order to get on rapidly with a piece of scientific research. By and large, he will not want that information in his own field for the elementary reason that what would interest him would not have been printed yet. It may not even have been written, and if he gets it at all he will get it directly or at one remove from somebody else working in the field. I talked to one such specialist years ago. He said: 'I do not read any scientific literature. There are only five people working in the field I am interested in and I know them all.' In that sense we have got right back now to the seventeenth-century scientists who communicated by letters—it is that and telephone calls nowadays. But the specialist may not know everything about fields such as apparatus and measuring methods;

it is generally ancillary information that he will want. But what he will want must be new; at least in the physical field he will not want to go more than three or four years back.

He may also want something else which is very difficult to define but might be called stimulation. In my efforts to reform scientific literature, years ago, slightly enfeebled now in practice but even more drastic in theory, it was pointed out that if you destroyed the journal by splitting it up into preprints you would prevent people reading the papers they were not supposed to read. Because, in fact, when you go to a library and pick up a number of a journal to look up a certain paper, you invariably read some other paper which it is no business of yours to read, especially in journals like the *Proceedings of the Royal Society* and *Nature,* which have an absolutely shocking mixture of subjects in them. All efforts to tidy this up would inevitably result in your not reading a great deal of material.

Now such a method of choosing reading matter is quite the opposite of everything you have been trained to do. In principle the whole vast machine of information is geared to the user who comes in saying 'I want a piece of information about this particular subject', and then, in the catalogue or otherwise, you find the piece and you give it to him. But this is a person who does not know what he wants, is not very sure whether he wants anything, and he must just take a 'blind' look—it depends on chance alone. I consider this as the proper nemesis of the information services. You cannot read everything, so why worry: why not just take a pin and stick it in various places and just take what information you can find? If you want to be scientific you can call it a random sample over a wide field. Every librarian would say, to advocate that procedure would be very bad, but, in fact, that is what most scientists do.

Let me be more precise, for this would be a nice subject for research, though it is not, as far as I know, one the committee has chosen. We could find out how far people read by chance only. In the end it may turn out that a statistical sample of knowledge may be the best you can hope for. The chance reader can hardly be called a type of user: it is rather that every user may want to read more or less by chance. With the chance reader I might now throw in the user who is just motivated by curiosity. But that kind of reader, the ideal member of a local scientific and literary society, seems almost to have disappeared by now. I would not list it as a category for a basis of inquiry.

To continue with the research user—first of all, how many are there in proportion to other users? This is not necessarily the same as the proportion of research workers in the whole number of potential users. There may be, let us say, 10 per cent of active research workers among your clients, but they may not occupy 10 per cent of your time, because they do not read very much and, as we showed years ago—and I do not think it has changed very much—some of them hardly read at all. Engineers, for instance, are very little given to doing any reading. Doctors and other biologists are rather surprisingly given to reading a large number of papers, but most of these are short.

Now we may consider the people who want actual information in order to *use* it, not to make new discoveries but to use it in practice, to incorporate the information into something that has to be made or done. I should very much like to know—here again is scope for research—what proportion of inquiries come from people who want to use the knowledge they get.

The next category of user puts a much greater burden on the service. This is the person who uses the information he gets from the library not to do anything with it but to write an article about it. Either he wants to write an article which contains a certain number of facts, which is not too bad, or he wants to use it in order to write an article which contains all the relevant facts on a particular topic—an exhaustive report, a textbook or material for a course of lectures. Student reading is a special sub-category of this but being more prescribed makes calls for more copies rather than more books. In the extreme case the user wants to use it to compose data-tables, which puts the greatest call on archive material.

Now I would like to know the statistics indicating the proportion of those different kinds of users, because I suspect very strongly that the third category that I mentioned—the practical user, and the fourth category—the user for writing articles, are probably the most frequent. On the other hand, they will not usually need, even those who are writing textbooks, the bulk of back information.

These are only needed by the last class of all, the historians of science. I do not think it fair to burden the normal or even the special library with service to the historians. We really ought to deal with the historians quite differently. First of all, the historians are absolutely negligible in number. You can see that by the thickness of the dust on the old numbers of the journals and old books, for there are not enough historians all put together to look at these journals—ever. Most of them are doomed to perpetual obscurity. The trouble is that the librarian cannot know which of them are doomed to perpetual obscurity and so he has to keep the whole lot of them or alternatively to get rid of them. I have followed the Urquhart report in a practical way in my departmental library by selling off back numbers of journals very rapidly according to the indications given in the report and by furnishing myself with a number of new journals which I could not otherwise have afforded. I really ought not to tell you this, because once it gets around, these old volumes will not be saleable at all. On the other hand most librarians and library committees have consciences and traditions, and probably will not do it even if they ought to. However, when I hear librarians complaining about lack of shelf space, I always feel that they had better first have a look at what books are on the shelves already and what use is being made of them: to do this by that very simple device gauging the thickness of dust, which is much easier than looking it up in the 'out' book.

Now the historians needs can be met in full by the organization of a comprehensive library of the history of science and technology, not necessarily in one spot. The two natural centres are the Royal Society Library and the Patent Office Library. These, linked with the historical sections of special libraries by a good book lending system, would enable all historical books and papers to be kept in a minimum number of copies and yet all be readily available.

So far I have talked only of analysis of existing means of communication, a fit subject for your Research Committee. But, even if successful, the reforms that would follow would not make a great difference. Quite frankly, in this problem of communication, do we really need to do it this way at all? Cannot we drastically simplify the process? The essence of the problem is how to organize the middle zone between the production and the use of information. We have to see how far the existing cumbrous mechanism can be completely short-circuited. If it were done it would not put you people out of jobs, because at the rate at which information is increasing any method of short-circuiting will still leave librarians and information officers with plenty to do. It would, however, take away much of the burden you are now carrying and I think a great deal can be done in that respect. Of course, my first efforts to do this, at the time of the Royal Society Information Conference, were complete failures. The attachment of editors to their journals was such that I was denounced in a *Times*' leader for suggesting that the journals should be broken up into separate papers. So, having failed at that, I am now proposing something which is even more drastic and that is the abolition of scientific papers themselves. This is quite a serious proposal.

What do we really want to communicate? A paper is really not a single item or bit of information, it is a collection of bits of information put together as the result of some months of work. Published papers also vary very much. Some are single papers and some are multiple papers, that is, they contain a number of separate pieces of information set out one after the other; many biological papers are of this sort. But even a closely knit paper like a mathematical paper contains a number of different theorems. Now the elements, the facts and ideas which go to make up the paper, could be communicated directly, and to the people who would really be interested in them, and far more quickly than by the cumbrous methods of printing.

This kind of communication will certainly come with the development of the computing machine and other devices of that sort. The printing trade, in a sense, has brought its own nemesis. It was quicker in the time of Galileo to get information round the scientific world than it is now, if it follows the ordinary channels. So of course it does not follow the ordinary channels, it follows quite irregular and exceptional channels. It works through that bugbear of all information officers, the unclassified report, through the verbal communication at a congress and so forth. This does not matter. The essential thing is that the information gets around quickly, if not always reliably.

Now there is a fundamental difference here between two functions of information, the suggestive function and the reliability function. In most cases we know that the material contained in a paper or scientific communication is wrong. That does not mean it is useless, quite the contrary. It is probably more useful when it is wrong than when it is right, because when it is wrong you can do something to make it better. When it is right it finishes the whole story. The point here is that in the insistence on getting everything right we are delaying the whole process of communication. The great complaint against the unclassified report, as well as against certain kinds of journal, is that they do not have any proper referee system. Now, in fact, referees are not infallible. There are notorious historical examples of this, as when Joule's paper on the conservation of energy was refused publication because the referees felt that the subject had no interest and that the writer came from Manchester. The only danger of publishing information which is not—I will not say is not true, but not considered true by referees—is that other scientists may be misled. But if the document is labelled, physically or otherwise, 'Believe this at your own risk', any scientist can use that material and if it goes wrong he will find out.

In my opinion, the proper way to organize the whole of scientific communication is to organize it in the first place according to the themes or subjects. Here the librarian or information officer is at an enormous disadvantage because he does not control the output of the material which reaches him and consequently he receives the material already hopelessly mixed up. Such sorting can be done, and I can say so with some assurance because I know that it has been done in one branch of science—crystallography. I say at least one branch of science because that is the branch I happen to know something about. It is probably done in many other branches of science as well, wherever there is a good and active international organization. What is needed is to look at the whole subject of information in its field, right from the beginning, that is, right from the person who produces the information, through the information services to the user, then the resulting flow sheet can be arranged in a very clear way. I have just been to the Congress of the International Union of Crystallography. Here, the transfer of information is channelled largely through a single international journal, the *Acta Crystallographica,* with a certain number of ancillary services, a complete system of reports, a complete system of data collection and presentation, a complete system of index cards for finding information, and a complete directory of all the scientists concerned and their special interests. The field is really systematized so that the only thing that can go wrong with it is that someone may do a spot of research and not tell anyone else that he is doing it—but even that could be checked.

Now such a system could be applied with suitable variation over the whole field of science. You could do a good deal more than that. You could, by using modern information transmission methods, enable people to get the information they want in an extremely quick way. Here, you yourselves have been an example, I think, to the rest of us in what I might call the ganglion system of communication. In animals there are a set of stages in the development of internal communicating systems. The simplest is a completely casual communication network, consisting of a number of points, each one connected to all the others like some of the old-time primitive telephone systems. Then, at the opposite pole, every point is connected to one centre: every bit of information has to go to the centre and out from that centre to all the particular points where it is needed. Then there is the intermediate stage, which is also like a telephone system, in which there are a certain number of interconnected ganglia which collect and distribute information over limited regions. Those ganglia, of course, are your establishments—the special libraries. But I think the transformation of the special libraries into the other branch of your organization, the information bureaux—I should not say another branch because most of you are both things at the same time—but the other function, let us say, is the clue to the transformation of scientific communication into a rapid and efficient service. Certainly it is the clue in advancing scientific discovery, because the evocative or stimulative aspect is more important than the data aspect.

It is still probably true that the more valuable clues come out of chance contacts between individual scientists than come from any amount of reading.

That certainly has been true in my case. But then the question is are the contacts really chance? They are certainly not pure chance. Sometimes the contacts are located; I mean that in most branches of science, if you want to pick up information, you are more likely to pick it up in Cambridge than anywhere else. If you go to Cambridge, although you may not know what it is you want to know or even that you want to know anything, you are likely to meet someone who is likely to tell you something that is going to be useful to you. Even chance contact evidently could be organized, not rigidly organized, but organized so that the information officer had, as it were, a number of voluntary aides who could get at any piece of information through a very small number of moves—four or five moves would lead any inquirer to any piece of information. And you could do it far better than just getting specified pieces of information by various retrieval systems, even the latest electronic systems. You could find information that the person does not know he wants; you could find the possibility of advancing beyond what his conscious requirements are. That is something which we have always done accidentally and we could now do it in an orderly way.

I anticipate the building up of an information service in the future on a logical basis as a piece of communications engineering. I am not a communications engineer but I can see many ways in which this could be done, and I am quite sure that with the multiplication of languages and with the other developments what are going on now—translating machines and so forth—that must come and come soon. The functions of the information officer and the specialized libraries will be transformed in the process. The storage system will become relatively subsidiary and the communications system would become dominant. I cannot say anything, it would be absurd to say anything now, of precisely how this is done, but I can say that where we go wrong is not in Dr Urquhart's efforts to deal with unanswered questions, but in dealing with unasked questions. The thing we have to find out is what do people really want to know? That is the future task of the information officer.

MEETING OF GROUP OFFICERS

Annual Conference, Brighton, September 1960

THE officers of the various Aslib Subject Groups met during the course of the Annual Conference at Brighton, under the Chairmanship of Mr R. G. Griffin.

The main item on the agenda was a discussion of the paper by Mr L. Wilson, Director of Aslib, in *Aslib Proceedings,* vol. 12, no. 7, entitled 'Group Activity in Aslib'. The Director outlined the main points of this paper and a general discussion followed. The chief points that emerged were that some Groups were considerably worried by the sparse attendance at meetings—often after a great deal of work by the Group Committee. Other Groups countered this by reducing the number of meetings to the point where only one a year was held, possibly together with a Conference. They felt that, even so, sufficient contact between members was maintained. The view was expressed that insufficient publicity was given to Group activities and that many Aslib members failed to realize that they could attend any Group meetings whether or not they were members of the Group. The Director pointed out that all known Group activities were publicized in *Aslib Proceedings,* but that not everyone reads these articles.

It was suggested that Aslib should hold a Union List of all Group periodical holdings, but a discussion showed that this was economically unsound and that in any case many of the Group Union Lists carried enormous numbers of duplicate titles. The view was expressed that Groups would do better to restrict their lists to uncommon titles and it was agreed that the Director and the Information Officer should look into the possibility of recording such titles in a card index at Aslib as they are reported by the Groups.

It was agreed that Group Officers should meet at least once a year—preferably at the Annual Conference—with the Chairmanship rotating in order of seniority of the Groups.

NATIONAL CENTRAL LIBRARY

THE 44th Annual Report of the Executive Committee of the National Central Library, for the year ending 29th February 1960, refers to the 'disappointingly slow' progress on the planning of the Library's proposed new building in Store Street. The possibility of obtaining additional storage space outside Central London is being investigated.

The installation of Telex has been approved.

Plans have been approved for the amalgamation of the National Union Catalogue and the Outlier Union Catalogue.

The Treasury has agreed to make funds available for the extension to overseas libraries of the work done by the British National Book Centre; at the end of the year there were 484 libraries subscribing to the Centre.

Careful consideration has been given to the Roberts Committee's Report; suggestions have been made to the Ministry of Education for the financing of the Library and the Regional Library Systems which differ from the recommendations of the Roberts Committee.

Monographs written in foreign languages, and not normally available for loan from co-operating libraries, will be acquired in greater numbers, as will also the publications of learned societies, both British and foreign, and periodical publications in the humanities not held by co-operating libraries in this country.

Total applications received (excluding adult classes) were 83,063 as compared with 77,004 for the previous year. The percentage of applications successfully dealt with was 72.22 as compared with 76.18 in the preceding year; this drop is attributed to the increased proportion of requests received for publications that are difficult to trace.

Outlier libraries, comprising 268 special libraries and twenty-nine London borough libraries, lent 16,483 items. Other special libraries provided 3,004 additional loans.

Work was continued on the maintenance of the Union Catalogue of Russian Books and Periodicals. Of the 2,463 applications it was possible to satisfy 1,528 (62 per cent).

Figures for international loans are 3,494 lent overseas by British libraries (2,488 last year) and 1,871 borrowed from overseas (1,804 last year). Loans were made to fifty-three countries and obtained from twenty-nine countries.

Letters to the Editor

TRANSLATORS' PROBLEMS

Dear Madam,

With reference to the recent correspondence on methods of counting words in translations, I find it hard to believe that it is possible (let alone practicable) to count each word in a translation (and the letters in every word more than ten letters long) as a matter of normal routine.

To avoid this tedious exercise, the method used in this office is to assume a basic word-block of six letters and to divide this number into the number of letters in an average line of the text. Thus one obtains a figure which can be multiplied by the number of lines on an average whole page to give the number of words per page. The number of average whole pages can be estimated and the figure for the average number of words per page multiplied by this figure to obtain the total number of words for the whole translation. If it is felt that judgement of the number of whole pages by eye is too much like guesswork, and assuming that articles of the same line-spacing constitute most of the day-to-day work, it is simple to make a gauge and read off the exact number of lines per page.

No doubt purists will object to an approximation such as this, but I would point out that in any case charges are normally made to the nearest half-folio, even after a supposedly accurate count has been made.

C. S. V. Salt,
Westinghouse Brake and Signal Company, Ltd.
82 York Way,
King's Cross, N.1.

25th October 1960.

Dear Madam,

The correspondence about the German words has been not unfruitful. The word I gave was not, however, a 'record'—one comes across many as long or longer. I recollect, when at school, showing the German master a word occupying *a line and a half* of print (no less; I forget the number of words, in the region perhaps of 100). It was given of course as an extreme example, and in fact by way of a joke. He said: 'Oh yes; well, of course, you can always put "*Gattin*" at the end'!

Yours truly,
Godfrey Sceats,
194 Cooden Drive,
Bexhill-on-Sea.

22nd October 1960.

SELECTIONS FROM THE RECENT LITERATURE

ALL ITEMS listed may be borrowed from the Aslib Library, except those marked *, which may be consulted in the Library.

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Geotechnique, vol. VII, 1957, June, and *Foundry trade journal,* no. 2236, 15th October 1959. The Librarian, Constantine Technical College, Borough Road, Middlesbrough.

Journal of documentation, vol. 11, no. 1. Box 1160, Aslib.

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